Global Patterns of Plant Diversity:

Alwyn H. Gentry's Forest Transect Data Set

Oliver Phillips & James S. Miller

Missouri Botanical Garden Press

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Foreword

More than eight years have passed since the untimely death of Alwyn Gentry and this now allows us some perspective on the contributions he made. That retrospective look tells us not merely that his work was of historical significance or just a step in our process of understanding how plant diversity is distributed, but also that Gentry influenced a generation interested in how forests are put together and why plant species are not evenly distributed in the world's forests.

The web site with Gentry's transect data is consulted by thousands of scientists each year. These include students in ecology classes studying forest diversity through leading research scientists investigating the factors that influence forest structure and diversity. This community of researchers continues to apply Gentry's data to basic ecological questions, but it is even more impressive how his students, colleagues, and others have continued to use his transect and tree plot methodology to pursue the questions that drove Gentry and for other applications. Gentry and his student Oliver Phillips extended his survey methods to quantify for the first time the percentage of plants used medicinally in Peruvian forests, and others have extended the methods for rapid survey of areas to assign conservation priority.

One somewhat unanticipated yield of these ecological sample methods has been their contribution to botanical inventory. The rigor of demanding the collection of every individual in a defined area has turned up an unexpected number of new taxa, many of which would not have been included in inventory efforts because they flower infrequently. Gentry himself described many new species based on his transect collection, and the association of ecological sampling has greatly improved the thoroughness of inventory at several sites. Many inventories in the Neotropics are more complete from the inclusion of tree plots or transects, and many new species have been first discovered this way.

Yet perhaps Gentry's greatest contribution was simply his persistence and "can do" attitude that allowed him to tackle questions that seemed daunting to others. He helped convince the world that rapid sampling really could be used to address the big questions about how forests were put together and why diversity was not evenly distributed. His development of the transect method that generated the data summarized in this volume was fundamental to the formation of the Rapid Assessment Program at Conservation International and an essential element in efforts to prioritize areas for conservation.

It is clear that the publication of this book will further the availability and use of Gentry's remarkable transect data. As his students, colleagues, and others use these and similar methods to extend our understanding of the distribution of diversity it will clearly improve the efficiency of our efforts to conserve the greatest number of species. We at the Garden hope that these efforts will create new milestones in our understanding of the world's forests, contribute to preservation of threatened species, and continue to build upon the legacy of Al Gentry into the future.

Peter H. Raven
Director
Missouri Botanical Garden

Preface

Al Gentry would never have imagined this book in this format. He always felt that the transect data he had collected were still incomplete and that 226 sites were not adequate to represent and explain the diversity found in the world's phytogeographic regions. Important forest types were not included in his samples, especially in the Old World. At the time of his death he was planning a trip to China, one that had previously been canceled because of the political unrest following the 1989 Tienanmin Square incident. While adding new sites at an ever-increasing pace, Gentry also published journal articles that gave glimpses of what this magnificent data set might one day explain, but he viewed the day when the whole endeavor would be synthesized as a distant point in the future. His central goals were to explain why some forests were more diverse than others and how floristic composition varied from place to place. The untimely death of Al Gentry and two of his research colleagues in a plane crash in western Ecuador on August 3, 1993, abruptly ended his phenomenal quest.

This volume does not pretend to be the conclusion that Gentry might have envisioned. Instead, it represents part of the Missouri Botanical Garden's commitment to ensuring that the invaluable floristic and ecological information accumulated by Gentry is available to scientific and conservation communities. In order to put the enormous quantity of information into context, we have written an extensive introduction that chronicles the development of Gentry's forest sampling techniques and examines the impact that his work has had on tropical biology and tropical biologists. Occasionally, especially when describing Gentry's methods and intents, we have attempted to guess what Gentry might have thought, but in general the opinions and interpretations are those of the authors.

How and why forest diversity and floristic composition vary were the fundamental questions that motivated Gentry to build a unique data set of forest diversity samples. His interest in these patterns was initially driven by an enthusiasm for scientific discovery, an enthusiasm that he never lost. During the 22 years he spent collecting this data, his interests broadened from understanding the ecological role of

Bignoniaceae to exploring the basic forces that determine forest diversity, structure, and composition. But in tropical biology, where today's discovery can be tomorrow's loss, it is impossible to ignore the relentless threat of extinction as forests are degraded and destroyed. In his efforts to understand tropical forests Gentry became as passionate a conservationist as he was a scientist. By sampling the richest ecosystems in the world across vast spectra of climates and soils, Gentry's research provided the data that conservation organizations needed to establish priorities. The sampling methodology that was used to collect the data in this book became the basis of his work with Conservation International's Rapid Assessment Program (RAP), an effort to quickly survey sites of conservation concern and provide the basic biological data that were needed by the developers, natural resource managers, legislators, and others concerned with the future of a particular forest.

A few months before his death, in a letter to the Pew Charitable Trusts in Philadelphia, which provided financial support for some of his studies, Gentry expressed his concern that in the face of rampant deforestation, the "studies that I've thought of as producing baseline data for conservational planning are looking more and more like botanical archaeology instead." Al Gentry lived his life as a race against the clock, but the clock of biological extinction is still ticking. The purpose of this book and the accompanying database is to make the fruits of his prodigious efforts widely available while they may still have practical benefit. The sooner that the insights these data make possible can be appreciated and publicized, the more likely they can help to promote the conservation of the forests that Gentry so dearly loved. We therefore hope that the dissemination of the results of studies conducted by Gentry and his numerous coworkers will encourage continued floristic research and promote forest conservation. The raw data are available electronically from the Missouri Botanical Garden at <http://www.mobot.org/mobot/research/applied_research/gentry.html>.

52°50'
53°
53°50'
50°00'
50°30'
Tampolo
Ampahana
Antsiranambidy
Antananivo
Ambinany
ANTALAHA
Antsahamena
Maromandia
C. Tsihananina
Antsirabato
Santaha
Antanambanoma
Ambalaharongana
Antakotako
Androfary
Ranomafana
Andanarafy
Sarahitra
Ampatihy
Rantavatobe
Manambelo
Sahamadi
Ankoho
Mahalevoina
MAROANTSETRA
N MANGABE
(Marosi Is.)
N RAVINA
N HARAMY
Nandrahanana
Ranahely
Sandrangola
Anandrovola
Anjinjalava
Antoraka
C. Tanjona
Ankazofotsy
Anaovandrano
Tanjona
Rantavato
Ampanadoena
Fampitahely
P R E S O U I L E
M A S O A L A
ANTRAFANACAMBY
ANTONGIL

Acknowledgments

The collection of field data, the processing and identification of voucher specimens, and the management and analysis of the resulting information were enormous tasks that could not have been completed without contributions from research colleagues, assistants, students, and volunteers at the Missouri Botanical Garden and throughout the botanical research community. Without their support, the data set would never have reached this size or significance. We have tried to compile a list of all of those who contributed, but our efforts will almost certainly fall short. We apologize for any omissions.

Numerous organizations provided financial support for Gentry's research. The National Science Foundation awarded six grants that directly or indirectly supported the transect studies (BSR 830-5040, BSR 834-2764, BSR 86-07113, DEB 75-20325, DEB 800-6523, INT 790-6840) and joint support was also received from Colciencias and the National Science Foundation (OIP 75-18202, INT 79-20783). The U.S. Agency for International Development, the John D. and Catherine T. MacArthur Foundation, and the Andrew W. Mellon Foundation provided support for activities in Peru, and the World Wildlife Fund provided support for studies in Madagascar. The National Geographic Society provided six grants to Gentry (1400-74, 1982-79, 2303-81, 2602-83, 3149-85, 3783-88) and provided additional support in a joint grant to W. Duellman (University of Kansas) and Gentry. Gentry also received support from the Pew Charitable Trust Fellowship and was a Pew Scholar from 1991 until the time of his death. His work with Conservation International provided the means to survey 15 additional sites. This work would not have been possible without the generous support of all these organizations, and their contributions are gratefully acknowledged.

Gentry rarely worked alone and tried whenever possible to include students and foreign collaborators in his fieldwork. His patience, unending willingness to explain his methodology, and constant enthusiasm for the collection and analysis of the data were a tremendous inspiration to his coworkers. Many botanists learned of Gentry's method by assisting him in the field, and some later went on to use it in their own

studies. Gentry also taught the method to student groups in Latin American countries. Numerous institutions provided support for Gentry's transect work by making collections, facilities, or personnel available to him. The following list, organized alphabetically by country, includes those collaborators and student groups who accompanied Gentry in the field and assisted with the collection of data and preparation of voucher specimens:

Argentina: C. Cristóbal, L. Malmierca, R. Neumann, C. Palaci, R. Palacios, A. Schinini

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Cameroon: D. Thomas, F. Namata

Central African Republic: W. Bromley, J. M. Fay, D. Harris

Chile: C. Ramírez

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Cuba: H. Cuadros, O. Valdes

Dominican Republic: R. Ortíz, S. Keel

Ecuador: B. Boyle, C. Cerón, C. Blaney, C. Dodson, C. Josse, P. Keating, A. Lajones, S. Manning, J. Miller, D. Neill, W. Palacios, F. Valverde, R. Valencia

Finland: R. Kalliola, K. Ruokolainen, M. Puhakka, H. Tuomisto

French Guiana: S. Beck, J.-J. de Granville, S. Mori

Germany: K. Kubitzki, M. Fallen, H. Poppendieck, W. Lippert

India: Armuga, K. Bawa, Jayakumar, Q. Prabhakar, Rudhakrisha, H. Suresh

Jamaica: V. Kapos

Japan: H. Ohba

Madagascar: G. Schatz, L. Dorr, L. Barnett, A. Rakotozafy

Malaysia: S. Appanah, J. La Frankie, Kochummen, J. Tagai (Sarawak), H. Lee, Forest Research Institute of Malaysia

Mexico: R. Dirzo, E. Joyal, E. Lott, G. Williams-Linares, Estación Biológica Chamela, Estación Biológica Los Tuxtlas, U.N.A.M.-Centro de Ecología, Cursos de Ecología Tropical

New Caledonia: G. McPherson

Nicaragua: W. D. Stevens, P. Moreno, A. Grijalva

Nigeria: G. Pilz

Panama: J. Briscoe

Papua New Guinea: H. Fortune, M. Hopkins, M. Swaine

Paraguay: J. Davalos, S. Keel, V. Vera

Peru: D. Alfaro, W. Pariona Arias, J. Aronson, F. Ayala, C. Blaney, F. Cornejo, C. Díaz, C. Grández, M. Horna, N. Jaramillo, B. León, S. Libenson, P. Núñez, R. Ortíz, O. Phillips, J. Revilla, C. Ruíz, D. Smith, M. Stern, R. Treadwell, J. Valcazar, R. Vásquez, F. Watson, K. Young, R. Zambrano, Universidad Nacional Agraria La Molina, Universidad Nacional de la Amazonia Peruana (Iquitos), Universidad Nacional San Abad Cusco, Museo de Historia Natural Javier Prado, Universidad Mayor de San Marcos

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Thailand: C. Niyomdham

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The bulk of voucher specimens were identified, at least to family and genus, by Gentry himself. A. Brant, K. Cook, M. Fallen, M. Guzmán-Teare, J. Ricketson, and R. Ortíz ensured that labels were produced for all specimens and were responsible for processing the collections. They painstakingly tracked Gentry's identifications and ensured that they were captured on the Missouri Botanical Garden's and Gentry's computer systems. Duplicate specimens were also distributed to country flora project specialists at the Garden and around the world. R. Gereau, R. Liesner, J. Miller, R. Ortíz, and R. Vásquez provided identifications for large numbers of families at the Missouri Botanical Garden. The specialist network involved is so large that it would be virtually impossible to acknowledge everyone who contributed to the identification of collections from the transects, and a complete list might include the majority of staff members and visitors to the Missouri Botanical Garden in the last 15 years, as well as most of the tropical botanists active at other research institutions. In most tropical families, many species are very poorly known even in fertile condition, and even specialists have trouble identifying sterile collections to species. In all, more than 100 botanists, including Garden staff and Gentry's colleagues elsewhere, have helped identify the mostly sterile transect voucher specimens, often for little professional reward. Undoubtedly, many of those who helped with this effort volunteered countless hours of their time.

Computerization of the transect data was an enormous job, involving several different assistants up to the time of Gentry's death. Merely maintaining the huge set of complex and ever-changing data required a great deal of effort, and data entry could be as mentally demanding as the analyses. Not only was it necessary to code and enter the data for each site in the various Gentry files, keeping track of which was the most up-to-date determination, but also the information collected for each voucher specimen had to be entered separately into the Garden's TROPICOS database in order to produce specimen labels. It has been a Herculean task to monitor each new identification and ensure that it was recorded on the specimen, in TROPICOS, in Gentry's field book, in Gentry's handwritten site files, and in Gentry's computer files. A. Pedroni-González, J. Quante, and others entered the field book data in TROPICOS.

Initial development of Gentry's SAS files and programs was begun by R. Perrozzi, and S. Adkins, B. Boyle, R. Clinebell, D. Faber-Langendoen, G. Fulton, N. Hediger, S. McCaslin, J. Miller, R. Ortíz, O. Phillips, H. Song, A. Tucker, and several Garden volunteers all contributed at various stages to the development of the SAS files, spreadsheets, statistical tests of Gentry's data, and other computer programs used to compile and analyze the data.

This book could not have been completed without the assistance and support of a variety of people and funding organizations. After Gentry's death, funding to support completion of this book and other aspects of Gentry's research was provided through the continuing support of the Pew Charitable Trusts and the National Geographic Society and by specific awards from the Geraldine R. Dodge Foundation, Lounsberry Foundation, Wallace Genetic Foundation, and Winslow Foundation. R. Ortíz volunteered to coordinate new determinations for Gentry's collections and to maintain the handwritten site files. K. Meldrum entered data for 33 temperate sites. R. Gereau, R. Liesner, G. McPherson, G. Schatz, and C. Taylor helped by verifying data for numerous sites. J. Myers contributed the intial maps, A. Tucker was instrumental at all stages of computer data set conversion and analysis, and H. Song developed programs to produce the statistical summaries for each site. We thank G. Aymard, H. Balslev, B. Boyle, R. Clinebell, J. Comiskey, R. Condit, C. Dodson, D. Gunter, D. Lorence, A. McPherson, R. Ortíz, G. Schatz, R. Sussman, and A. Taber for their invaluable assistance and constructive comments during the development of this book.

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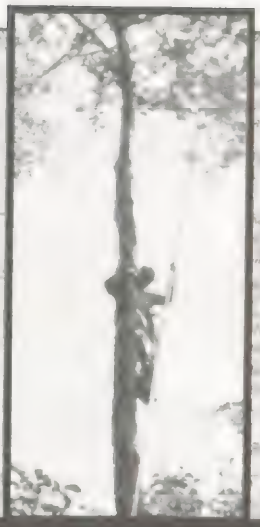
Finally, Nancy Hediger assisted with the difficult task of ensuring that the data was entered in standardized computer format and helped prepare the site pages. She entered data for more than 50 tropical sites that had not yet been computerized, and oversaw the conversion and editing of files that had previously been entered and then decoded. She carefully assembled all of the summary statistics for each site and checked the locality data and names of collaborators. Without her help this book could not have been completed.



Global Patterns of Plant Diversity:

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Oliver Phillips & James S. Miller

Introduction & Historical Background

Patterns of Diversity

The questions of how and why patterns of plant and animal diversity vary from one region to another have long intrigued biologists, but have proven very difficult to address. Collecting the great quantity of comparable data necessary to approach these questions is a formidable task, yet one made all the more urgent by the specter of a mass extinction that threatens life's delicate fabric (Pimm & Raven, 2000). The more we know about how diversity is distributed spatially, the more effectively the scientific community will be able to provide the information needed to intelligently manage our planet's biotic resources.

Some diversity patterns have long been obvious, although their causal factors may have remained obscure. The first explorers to travel to the Tropics noted the latitudinal gradient in biological diversity and marveled at the wealth of species in tropical forests. Many modern authors (e.g., Fisher, 1960; MacArthur, 1965; Pianka, 1966; Rosenzweig, 1968; Baker, 1970; Currie & Paquin, 1987; Stevens, 1989; Currie, 1991; Latham & Ricklefs, 1993) have noted increasing species diversity with decreasing latitude, but have proposed a variety of explanations. Until recently, however, biologists have paid much less attention to the differences in diversity between tropical areas. Nevertheless, the differences in plant species richness between tropical sites span a range similar to the differences between the temperate zone and the tropics. For example, the total number of woody species in a 0.1-ha neotropical forest transect varies from about 32 to 276 species (Gentry, 1982a, 1988a; Clinebell et al., 1995). The lower extreme is not much greater than the average of 20 species found in similar samples in moist temperate forests in North America and Europe (Gentry, 1988a).

Improving our understanding of why and where diversity is concentrated is clearly a pressing concern because we need to conserve and develop our biological resources before they disappear. But there are also questions central to ecological theory that can only be resolved with a thorough understanding of patterns of life. In spite of a massive literature on distribution of plant diversity, including comprehensive books and reports (e.g., Lugo, 1988; Terborgh, 1992; Ricklefs & Schluter, 1993; Huston, 1994) and recent attempts at cross-community analysis and synthesis (e.g., Gentry, 1990; Dallmeier & Comiskey, 1998a, 1998b; Wills & Condit, 1999), we still understand remarkably little about how species coexist and why

some communities are so much more diverse than others. A primary reason for our ignorance is a failure to effectively sample the world's diversity with standardized methods. To answer how and why the patterns of forest diversity and floristics vary, we need standardized ecological sampling from a range of sites across wide environmental gradients. No amount of computer-based modeling of remote sensing data can replace the need for direct measurements from the forests themselves. The lack of standardized and reliable information has been most acute for the tropical forests, because their flora and fauna are understudied and because the sheer numbers of tropical taxa can frustrate even the best efforts of taxonomists and ecologists.

Whittaker (1972) proposed dividing species diversity into seven discrete ecological levels, ordered by scale, and his terminology has since become widely adopted. The number of woody plant species per standardized sample is a good first-order estimate of local plant community diversity, or alpha diversity (Whittaker, 1972, 1977; Clinebell et al., 1995). Where several such samples are repeated in adjacent communities, they can be used to estimate the spatial turnover in species between communities, or beta diversity. High levels of alpha and/or beta diversity result in high diversity at the regional level, or gamma diversity. While the 0.1-ha method used to collect the data presented in this volume may in theory be used to estimate alpha, beta, or gamma diversity, Gentry seldom collected replicate samples (there are exceptions—see Table 3 in Chapter 3), and his central research quest was an attempt to understand patterns of alpha diversity.

The Gentry Transect Data Set

Only by sampling widely and consistently across the whole spectrum of climates and soils can biologists obtain the information needed to understand large-scale diversity patterns. Huge impediments have blocked the way to developing such a data set, including the lack of standardized sampling methodology, the enormous amount of work necessary to collect the data, and the particular problems of ecological sampling in tropical forests where most diversity is located (Phillips & Raven, 1997).

Al Gentry carrying clipper poles in Colombia.

Gentry developed a relatively rapid sampling methodology that would allow collection of a standardized floristic sample from a given site in a matter of days. By measuring all plants ≥ 2.5 cm diameter at breast height (dbh) in ten 2 × 50 m transects, he could obtain an estimate of alpha diversity and taxonomic composition at a particular site. As the data set grew, he became more excited about its ability to address broad research questions, and his enthusiasm for sampling never waned. By the time of his death, he and his collaborators had sampled 226 sites in 40 countries. Although the simplicity and assumptions inherent in Gentry's rapid sampling methods meant that they could not answer all questions about diversity, never before had such an extensive set of comparable data been collected on a worldwide scale.

The sheer amount of fieldwork and effort to collect the data was enormous, but perhaps the most daunting challenge was the taxonomic complexity that tropical forests presented. Few taxonomists have

been able to come to grips with the total flora of even a small tropical area, and ecological sampling presents the additional problem that the majority of plants encountered are sterile. Identification of sterile ecological vouchers is difficult, even where the species are well known. Gentry focused his work on the most poorly understood parts of South America where the few available floras were incomplete and mostly worthless for the purpose of identifying sterile plants. As a taxonomist in a hurry to answer ecological questions, Gentry needed to find some way to identify sterile specimens without any literature to guide him. In meeting this challenge, he created a revolution in the science of plant identification.

In the early 1970s, when Gentry began his transect studies, the Missouri Botanical Garden was ideal for fomenting these philosophical changes. The availability of an herbarium that already had more than 2 million specimens, including a strong collection of neotropical plants, an outstanding library, and a huge stream of incoming specimens from Panama and other parts of Central and South America provided the tools necessary for Gentry to rethink how plants could be identified. In addition, his colleagues Tom Croat, Bill D'Arcy, Gerrit Davidse, John Dwyer, and Ron Liesner were focusing a large amount of their energies on neotropical floristics, often collecting and then identifying large numbers of their own collections. Gentry and Liesner, in particular, spent a great amount of effort learning to recognize plant families and genera using only vegetative characters, and Gentry began to construct his own keys, an effort he continued for years. As he continued his work in both the herbarium and field, he carried a notebook that he constantly updated with sections on each plant family. He viewed plant identification, which had typically taken place in the herbarium, as a two-part process. Large numbers of sterile specimens could be identified, but if identifications were to be accurate they required careful observation and recording of data not often captured in the field. Thus, Gentry scrupulously recorded distinctive odors of certain families, presence and type of sap or latex, bark characteristics, branching patterns, and other features of growth habit. He found that if these characters were carefully recorded in the field, they greatly assisted in recognition of families and genera in the herbarium.

This process allowed Gentry to collect a large set of unique ecological data, but his keys to families and genera of sterile plants have also proven extraordinarily useful for all who need to understand neotropical forests, and have been synthesized in the monumental *A Field Guide to the Families and Genera of Woody Plants of Northwest South America*, published with Peruvian botanist and plant illustrator Rodolfo Vásquez shortly before Gentry's death (Gentry & Vásquez, 1993). The primary impact of this book was a contemporary upheaval in the practice of neotropical botany, as for the first time the world's richest flora has become accessible to a new generation of field biologists. By making the tools of his trade available, Gentry has ensured that many more botanists will be able to conduct the kind of rapid ecological sampling he pioneered.

Through his efforts, Gentry demonstrated the feasibility of sampling even the richest forests, and showed, too, that specimens—even those without flowers and from poorly understood tropical regions—could be accurately identified in most families. As he was developing this radical new approach, Gentry single-handedly took on the formidable task of building a large, accurate, extensive, and consistent data set of forest diversity. The 226 comparable and taxonomically resolved sites he and his colleagues had sampled by the time of his death represented the single largest effort to understand patterns of plant diversity ever undertaken. Inspired by his example and willingness to explain his methods to others, Gentry's colleagues and students have continued this effort, sampling extensively in many parts of the world, but particularly in Latin America. Some of the sites included in this volume were not collected by Gentry, but are those of his collaborators who collected them with the intention of adding their data to his data set (see Table 1 in Chapter 3). Many additional sites have been collected since Gentry's death and the total number of 0.1-ha forest samples is now more than 500 (see Table 10 in Chapter 4). Later in this book (Chapter 4) we discuss to what extent these various new data are comparable with Gentry's, and propose some simple approaches to standardizing new samples and therefore allowing comparison with the world's most extensive forest ecological data set.

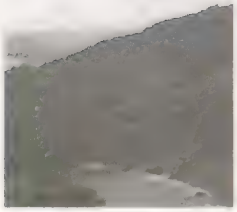
Within his lifetime, Gentry's prodigious efforts generated a global sample of forests that is simply without parallel. Other researchers have used one consistent methodology to measure diversity at multiple sites, but none have sampled at so many sites, and no multi-authored data set using a single, comparable methodology approaches Gentry's in terms of ecological and geographic extent. The transects described in this book cover most of the global variation in soil types (in Amazonia, for example, they range from ultra-poor white sand to more recently derived rich alluvial soils). Climatically, the forests sampled range from tropical thorn-scrub with less than 500 mm rainfall to pluvial, with 9000 mm near one of the world's wettest places in Pacific tropical Colombia, and from cool temperate to equatorial. They span an altitudinal range of over 3000 m, from upper montane forest down to lowland forest near sea level. They span a geographical range in the Americas from 40°S to 52°N and in the Old World from 20°S to 60°N, including North, Central, and South America, Europe, Africa, Madagascar, Mauritius, India, continental Southeast Asia, the East Indies, Japan, Taiwan, Australia, Papua New Guinea, and New Caledonia. Summaries of subsets of these data were published and analyzed in Gentry (1982a, 1988a, 1992a, b, 1993b, 1995a, b), Gentry and Ortíz (1993), Clinebell et al. (1995), and Enquist and Niklas (2001).

This book summarizes results from 212 sites sampled by Gentry, and 14 sites supplied by colleagues. Vouchers from Gentry's transects account for many of the more than 80,000 plant collections he made. Transect sampling density was greatest in South America (126 sites), especially in the Andes and in the lowland forests on either side of the continental divide—areas where high rates of deforestation coincide with exceptional endemism and global diversity records. Many of the sites sampled by Gentry are now considered to be biodiversity hotspots and among the most important sites for conservation (Mittermeier et al., 1998; Olson & Dinerstein, 1998).

Some of his finds were truly spectacular. In the Chocó region of western Colombia and in upper Amazonian Peru, Gentry found five sites with more than 250 plant species ≥ 2.5 cm dbh in 0.1 ha, more than many botanists had thought possible. Twenty-two of the sites he sampled had more than 200 species. He also found 300 species of trees and lianas ≥ 10 cm dbh in a 1-ha tree plot he sampled, suggesting that the aseasonal equatorial forests of western South America are perhaps the global epicenter of tree and liana diversity (Gentry, 1988b). And whenever he laid out a transect or plot, Gentry would almost inevitably encounter species new to science.

Gentry was particularly fond of talking about discoveries by himself and colleagues that revolutionized our biogeographic understanding of plant groups, or showed how little we still know about the Tropics. Several of the tree species that dominated sites where transects were collected were previously undescribed. The major timber tree of the coastal Ecuadorian wet forests turned out to be an undescribed species in the genus *Caryodaphnopsis* Airy Shaw. This genus had been assumed to be exclusively Asian until inventories by Gentry and others showed that its center of diversity is in South America, where nine new species have now been described (Gentry, 1977, 1989; van der Werff & Richter, 1985). *Caraipa utilis* Vásquez, the most highly prized tree species for building homes in Iquitos, Peru, is common in transects in Amazonian Peru but was only recently described as new to science (Vásquez, 1991).

At Centinela Ridge in western Ecuador, Cal Dodson and Al Gentry found 90 new plant species, most of them apparently endemic to a tiny area of 20 km^2. High enough to create a local cloud forest effect, and isolated from similar forests, this botanically unexplored narrow ridge had apparently evolved a distinctive flora, suggesting that other isolated forests in the Andean foothills could have similarly unique assemblages of species. They speculated that hundreds of undocumented plant species extinctions could have occurred when forests like Centinela were cut (cf. Gentry, 1996). By 1988, Centinela itself had been completely cleared for agriculture. Gentry often closed his popular lectures with images of the unique trees and orchids of Centinela, and finally, a picture of mist filtering through the debris of the fallen forest. The story of Centinela now has added poignancy, for it was during a final search for cloud forest remnants in western Ecuador in 1993 that the small plane carrying Al Gentry, Ted Parker, and other biologists crashed into a mist-covered mountain.



The 0.1-Hectare Transects & Ecological Sampling

Development of the Transect Sampling Method

Gentry began collecting transect data during the year he spent in Panama from August 1971 to August 1972 as part of his doctoral studies at Washington University (St. Louis). The first three transects (Curundu, Madden Lake, and Pipeline Road) were not collected to study forest structure or diversity, but rather to demonstrate that Bignoniaceae, the focus of his taxonomic interests, were the dominant liana family in neotropical forests. By documenting the number of species, density of individuals, and season of flowering, he was able to show how different pollination syndromes and phenology allowed a large number of closely related species to exist sympatrically. Upon completion of his doctoral dissertation, he was employed by the Missouri Botanical Garden. Monographic and floristic work occupied most of his time, but slowly he continued his transect studies. Gradually, his primary interest changed from studying the importance of Bignoniaceae to an examination of the environmental factors that controlled overall forest diversity as he realized the power of the sampling method he had begun using.

Over time, Gentry's interests broadened further and he conducted a variety of ecological studies, but the 0.1-ha transect data summarized in this book represent the majority of his sampling effort. With these transects, Gentry sampled every plant with a diameter of 2.5 cm or more in 10 lines each of 2×50 m, with the stated aim of making a representative sample of the larger plant component of the forest. Using this method, temperate forests could be sampled in an afternoon, and surveys of even the most diverse tropical forests could be completed in a week. Thus, he had developed a method for rapidly generating data that allowed between-site comparisons of diversity, taxonomic composition, and some aspects of forest structure. Moreover, it was a method that fit well with his lifestyle, and in the course of his nearly continuous travels he was able to amass data from a large number of sites.

His interest in more detailed questions, beyond those that could be addressed with the 0.1-ha transects, led him to another sampling procedure, working with 100×100 m (1-ha) tree plots, measuring every tree and liana over 10 cm diameter, and vouchering each species with at least one collection. In most cases, all trees were marked with permanent numbered aluminum tags allowing the sites to be recensused at later dates. This technique is a more time-consuming approach to inventorying forests than the 0.1-ha

transects, but establishing study plots does lay the groundwork for a variety of potential future on-site research. With some 1-ha tree plot data already available for comparison from elsewhere, Gentry also saw the value of permanent plots and participated in establishing 14 permanent 1-ha plots in Peru, 1 in Venezuela, and 1 in Colombia (Erwin, 1984; Gentry, 1988a, b; Faber-Langendoen & Gentry, 1991). Floristic data from some of Gentry's Peruvian plots have already been partially published (Gentry, 1988a, 1994; Phillips et al., 1994b), and some are discussed and analyzed elsewhere (Foster et al., 1994; Gentry, 1988b; Peters et al., 1989; Phillips & Gentry, 1994; Phillips, 1993, 1996; Phillips et al., 1994a, 1998a, b).

Working with neotropical mammalogist Louise Emmons, he also developed a different approach to evaluate the fertility, phenology, and composition of the forest understory (Gentry & Emmons, 1987), in which 500-m transects were laid through closed-canopy forest, in order to record and identify all flowering individuals observed within 5 m of the ground and 2.5 m on either side of the transect line (resulting in a total sample of 0.25 ha).

The 0.1-Hectare Transect Methodology

Gentry's main commitment was to produce a large, internally consistent and global forest diversity data set that allowed inferences to be drawn about local, regional, and global patterns of diversity. During his studies, he was also driven to find the world's most diverse forests and understand the factors that led to large concentrations of species in small areas. The 0.1-ha transect method is ideally suited to collecting data from multiple sites in a consistent manner, and so for asking questions about nature that would otherwise be almost intractable. A few days in the field can generate comparative data on alpha diversity, the taxonomic composition, families, genera, and species that dominate the site, density and basal area of the forest cover, and in addition, often yield previously unknown species or new geographic records of uncommon taxa. Other forest inventory protocols are clearly much more appropriate for understanding detailed ecological processes, but the 0.1-ha methodology is ideally suited to understanding large-scale global patterns in forest structure, diversity, and composition by rapidly accruing data comparable across sites.

The value of generating comparative data in a single, brief field visit was not a unique realization in botany, and others in tropical biology were also developing methods for quick inventory of the organisms that were the focus of their research. In 1989, Conservation International's Rapid Assessment Program (RAP) was conceived on a field trip by Murray Gell-Mann of the John D. and Catherine T. MacArthur Foundation, Spencer Bebee of Conservation International, and Ted Parker, the ornithologist who initially led the RAP program. RAP was designed with in-country scientists as integral participants on each trip, but the initial permanent members of the team were Al Gentry, Ted Parker, Louise Emmons, and Robin Foster, a plant ecologist. Capitalizing on their years of cumulative field experience, the RAP team hoped to identify sites that were equally of great biological interest and under significant threat of destruction. They developed

The Rapid Assessment Team in 1990 in Bolivia; founding members Ted Parker (far left), Al Gentry (middle), and Robin Foster and Louise Emmons (far right).

methods to rapidly document their biological importance and produce the data that could be used to argue for their continued protection. Gentry's 0.1-ha transects were the perfect match for this sort of endeavor, and 15 neotropical sites included in this book were sampled on RAP expeditions.

The method for setup, collection, and analysis of a 0.1-ha sample was initially described by Gentry (1982a) and is elaborated here based on field experience and discussions with Gentry and his colleagues. Each 0.1-ha sample represents the sum of ten 2 × 50 m subplots. Each subplot is defined by a 50-m-long transect line oriented in a predetermined direction (usually perpendicular to or parallel to a trail or stream) from a randomly selected starting point. All vegetation within 1 m on either side of the transect line is included, yielding a 2 × 50 m subplot. Each subsequent 50-m-long transect line starts at or near the end point of the previous line and takes a new randomly or near-randomly chosen direction, usually within the forward 180° arc, such that the final plot represents 10 lines zigzagging in a random walk from the starting point.

All plants with a stem diameter at breast height (1.37 m) of 2.5 cm or more and rooted within the transect area are included in the sample. If a stem overlaps the plot boundary, its dbh is recorded only if the distance of the midpoint of its base measured perpendicular to the transect line is ≤ 1m. The samples thus include trees, larger shrubs, lianas, hemiepiphytes, and occasionally coarse herbs and low-growing epiphytic vines. Large, stemless palms are included if petiole diameters reach 2.5 cm.

Each plant encountered is identified or recorded as a unique morphospecies, and voucher specimens are prepared if the taxon is encountered for the first time or if there are questions regarding its identity. Each stem diameter is recorded. Diameters of buttressed trees are measured or estimated immediately above the buttresses. If an erect plant branches below breast height, the diameter of each stem ≥ 2.5 cm at breast height is recorded separately. Each leaf rachis of acaulescent monocots (e.g., some palms) is treated as a "stem" if ≥ 2.5 cm dbh. However, breast height is a difficult concept to apply to lianas, which may root at multiple points. For lianas rooted within the plot, Gentry simply recorded their greatest stem diameter if at any point they were ≥ 2.5 cm, even though this point of maximum diameter frequently falls below breast height. Any hemiepiphytes with descending roots greater than 2.5 cm at or below breast height (such as some Araceae) are included, whereas an ascending terrestrial liana of equivalent dimensions might be included in the sample on the basis of its greatest diameter regardless of where this occurred.

Determination of what constitutes an individual may be problematic too, especially for lianas. For density tabulation, the absence of above-ground connections between plants is taken to identify individuals, even though this sometimes results in treating as separate individuals liana stems that were probably derived as vegetative shoots from a no-longer-evident common stem. In the case of colonial palms, bamboos, and acaulescent monocots, a cluster of stems or large-diameter leaf rachises is taken as a single individual if evidently from a common base, and each stem or rachis ≥ 2.5 cm diameter at breast height is measured.

With very few exceptions in this data set, each unique or potentially unique morphospecies at each tropical and subtropical site was vouchered. When working in diverse forests, this process is essential, as it is seldom possible to identify the majority of species without extensive study in the herbarium, following comparison with specimens of related species. Sometimes the family, let alone genus or species, cannot be identified until later and furthermore, each stem recorded in the database is tied to at least one voucher, without which it would be difficult to incorporate updated identifications and nomenclatural changes into the data set. There was one exception, however: Gentry did not collect vouchers from temperate sites with well known and relatively depauperate floras when he felt that accurate field determinations were possible by sight alone.

Sorting the hundreds of individuals encountered in a 0.1-ha sample into species and morphospecies required tremendous skill, and here Gentry was unrivaled. There were few collections that he could not immediately identify to family, and over time he developed the ability to instantly recognize the vast majority of genera. Yet while perhaps no one had the ability to recognize as many species as Gentry, the

enormous diversity of the Tropics required that he assign provisional names to many species that he encountered as recognizable, but unnamed, morphospecies. He generally identified a species to family or genus and then used a distinctive morphological feature to refer to it, until later studies in the herbarium allowed assignment to a particular species. Thus, working names like *Ficus* "drip tip," *Inga* "winged-rachis, pilose leaflets," and *Psychotria* "blue-fruits" often covered the pages on which he recorded his original data (see Fig. 1 in Chapter 4). These provisional names provided a working label for easily recognized morphospecies that were encountered more than once, alleviating the necessity of vouchering the same species repeatedly.

Al Gentry pressing plants at Mishana (sites 161–162), Peru, ca. 1979.

Specimen identification was mostly done by Gentry—not only the initial determinations to family and genus in the field, but also most of the subsequent time-consuming work of comparing with fertile herbarium material. However, he also received help from many botanists and assistants at MO, and specialists elsewhere (cf. Acknowledgments). Although Gentry strongly supported the computerization of all his data, he was generally too impatient to see the results to wait for the data to be entered before he began analyzing, presenting, and publishing them. Thus, he maintained a written file for each site, from which he calculated by hand most of the summary statistics that he used in his numerous publications. Computerization of the transect data was a time-consuming process, because of the rapidly growing size and complexity of the data set, the difficulty of working with mostly sterile specimens from poorly known tropical regions, and often difficult-to-read field notes. When the data began to accumulate, there was no readily available computer software to compile and analyze the information. Task-specific programming eventually generated records for thousands of specific taxa stored in nearly 200 SAS-readable site files on a VAX mainframe computer at Washington University. Each taxon had its own unique six-letter code readable by the statistical analytical program SAS, requiring maintenance and careful checking of a separate computerized code file in order to prevent code duplication. Thus, each time a taxon's determination was updated, its code also had to be changed—both in the code file and in each computerized site file in which it occurred.

Al Gentry teaching a class to forestry students at Bosque Nacional von Humboldt (site 147), Peru, ca. 1981.

By the early 1990s, the marathon effort of Gentry's assistants to computerize the data and analyze them with SAS and other statistical routines was beginning to bear fruit, reflected by the increasing use of statistical tests in Gentry's later papers. Improvements in software and hardware have now allowed

conversion back to more easily understood full binomials. We have used full names and personal computer software to produce the summary statistics for each site presented in this book, from data in the same spreadsheet format as is now publicly available over the Internet. While the technology for tracking and managing floristic information has improved immeasurably, a global forest inventory project starting today would still face the daunting problems of incomplete herbarium collections for comparison, poorly resolved taxonomic issues, and a severe shortage of specialist expertise to call on. These conditions will continue to apply, irrespective of the field sampling method used.

Data for additional sites in this book are included with the gracious permission of the collectors. We have included other sites that may be directly compared to Gentry's, i.e., where the method was applied in the same way. Of the sites we include, as far as we are aware only Kapos (1982) had slightly different sampling methods from those described above. Thus, this volume includes results from two Jamaican dry forest transects (Round Hill Top and Round Hill Slope) (Kapos, 1982, and pers. comm. to Gentry), based on a large plot divided into 10×10 m subplots. In this case, the original data used a 3 cm or lower dbh limit and did not include lianas; in the hilltop sample Gentry added in the few smaller stems and lianas to the original Kapos data, but for the slope sample only trees $\geq$ 3 cm dbh are included in the data analyzed here.

Sampling Assumptions of the 0.1-Hectare Transect Method

Ecologists sample small sections of communities; they rarely attempt to measure the whole community, for obvious practical reasons. But in order to draw firm conclusions about the nature of the whole community it is essential to determine to what extent the samples are representative of the whole. To be fully representative, the samples must be both unbiased (or any biases have to be known and their effects broadly understood) and sufficiently large (or numerous) to adequately represent the community. These criteria may seem simple enough, but in practice it is hard to operationally define "unbiased" and "sufficiently large." The meaning of both depends mostly on the scale of the natural phenomenon being sampled (stand, community, site, landscape, region), and is complicated by the fact that ecological units are not always easily separable. Bearing in mind that probably no forest sampling technique, and certainly no rapid sampling technique, can always satisfy the two criteria completely, we first examine Gentry's 0.1-ha transect method against both and then contrast it with another widely used sampling method.

Criterion 1: Does the method yield an unbiased sample of the community?

Gentry did not usually make fully randomized samples of the vegetation, whether at the level of the whole site, or at the level of the actual community. Usually, he would first undertake a brief, visual survey to gain an idea of the natural variation in the vegetation at the site, and to distinguish any clearly differentiated communities. With this prior knowledge, he would then restrict the 0.1-ha sample to the chosen community, establishing additional transects in other forest types at the site if time permitted to stratify the overall sampling effort at a site. Thus at Mishana, in Peru, he sampled separate 0.1-ha transects on each of the distinct substrates of the region: white sand, non-flooded lowlands, and the seasonally inundated tahuampa. Within each community the general location of the transect area was usually chosen subjectively on the basis of visual assessment of the representativeness of the forest community, even though Gentry would usually locate the start point and initial sampling direction at a randomly selected point. Some situations would induce him not to select the direction of the transect at random, perhaps doubling back instead or starting a new line at a point disjunct to the previous line's end. These included:

- Sampling in steep terrain, for which subsequent lines may have been constrained to ensure that

they sample the defined strata by avoiding large elevational changes. Elevational changes can affect microclimate appreciably over short distances in tropical mountains, e.g., exposed montane ridge-top versus protected montane slope forest.

- Lowland samples were sometimes constrained to follow a particular forest type where vegetation types were clearly defined by geomorphic or edaphic features. Otherwise, over a straight line distance of several hundreds of meters, it is possible to move from habitat to habitat, e.g., adjacent floodplain and terra firme forests or adjacent forests on white sand and laterite.
- Transects may have been constrained to avoid new large tree gaps if they were deemed large enough to be disruptive to the relatively small sample.
- Samples in primary forest remnants were often constrained to avoid anthropogenic edge and successional habitats. In some cases, shaping the sample subjectively was the only way to rescue sufficient biological information from a small patch of obviously doomed forest.
- Many of Gentry's coworkers note that occasionally he shifted the starting point or direction of an individual transect subplot as he "had to have" a particular species in his sample! It may have been one of his beloved Bignoniaceae, a particular tree species "typical" of the forest type but as yet unsampled, something rarely encountered, or even an impressive large tree, and he was known at times to non-randomly orient a subsequent transect toward that individual.

The first four types of sampling "bias" exhibited by Gentry 0.1-ha transects are all defensible, given his primary objective to sample the plant diversity of a mature forest. Moreover, they are by-and-large consistent with similar biases adopted by many ecologists when establishing temporary, and even some permanent, samples in forests. They do not, therefore, substantially affect the comparability of Gentry's transects with those of other biologists. The last form of bias is clearly more peculiar to Gentry (though other ecologists may succumb to their own personal urges to collect more "interesting" samples). Therefore, results from Gentry and others, even if both by ostensibly the same method, should be compared with a degree of caution. However, it is unclear if Gentry's personal biases affected the total species count substantially, and in the context of sites with 100, 200, or nearly 300 taxa sampled they could not have greatly altered the specific, generic, familial, or habit class distribution of plants sampled. Therefore, in terms of floristic composition, at least, Gentry samples are presumably comparable with data gathered by others following similar sampling protocols. The Gentry data set not only stands on its own, but is also a "living database" against which newly sampled sites may be reasonably compared in the future.

Criterion 2: Is the sample size adequate to represent the community?

One-tenth of a hectare is a small area, particularly when compared to the more widely used standard area of 1.0 ha adopted for most permanent plots, and is minute in comparison to the 50-ha plots recently established at some locations in both the Old and New World Tropics (Condit, 1997). Certainly, 0.1 ha is insufficient to sample all the plant species in most tropical forest communities. In some forests, species-area curves do not even approach an asymptote after a 0.1-ha sample. Yet no rapid sampling protocol could meet a strict requirement of leveling out of the species-area curve, and even 50-ha plots do not capture every species in tropical forest communities (e.g., Condit et al., 1996).

However, Gentry's aim was to enable comparisons among many forest types, not to sample all species or predict total species richness in any one site. Therefore, a more appropriate question to ask is whether each sample adequately represents the composition and relative diversity of the plant community from which it was taken. This is a difficult question to answer, and one which can be examined in a number of ways.

First, almost all ecological sampling methods generally include only a percentage of the plants present in a particular vegetation type and operate under the assumption that the plants included are representative of the overall diversity present. In this respect, the 0.1-ha samples perform well for their size, being composed of 10 different lines that may traverse a wide extent. Therefore, they can be expected to pick up substantial topographic, microclimatic, and hence taxonomic diversity within a community. Spreading out the relatively small sample area generally increases the percentage of available species included in the sample and reduces the likelihood of skewing results due to clumped distribution of species. Moreover, most forest sampling methods focus exclusively on the self-supporting woody plants and therefore exclude herbaceous plants, climbers, and other non-tree growth forms. Gentry's technique samples a more representative cross section of a forest's phytodiversity because hemiepiphytes and climbers are included. Trees and shrubs are also included if they exceed 2.5 cm dbh, so the technique also captures a wider sample of woody plant species than most tree plots that sample only the trees that reach 10 cm dbh.

Al Gentry in forest in Colombia, ca. 1989.

Second, direct tests of the replicability of 0.1-ha samples are available from a few sites where duplicate samples were made in essentially the same community, and in all cases replication yields nearly identical results in terms of species number. For example, similar total species numbers were obtained in duplicate samples from Kitlope, Canada (10 and 9 spp.), Mudumulai, India (15 and 19 spp.), Pasoh, Malaysia (210 and 221 spp.), Río Palenque, Ecuador (119 and 121 spp.), and Yanamono, Peru (214 and 226 spp.). Each pair of species richness values shows remarkable consistency, even though the individual samples are each floristically very distinct, supporting Gentry's contention that species richness sampled is largely independent of which subset of a community's species happens to be included in the sample (Gentry, 1982a). This is critical, as it shows that species richness can be compared between different sites.

Finally, there is remarkable predictability of total species richness on 0.1-ha samples along environmental gradients (Gentry 1982a, 1988a, 1995a; Clinebell et al., 1995), and remarkable predictability of the dominant families and life forms within the same life zones and phytogeographic regions (Gentry, 1988a, 1991a, 1992a, b, 1993a, 1995a, b). Using 0.1-ha samples and a suite of environmental co-variates such as rainfall and soil conditions, it is possible to derive multiple regression models that explain 70–80% of the variance in alpha diversity (Clinebell et al., 1995). This is almost twice as much as other equivalent neotropical and paleotropical models based on a smaller number of 1-ha samples (Phillips et al., 1994a). The surprising lack of statistical noise in the 0.1-ha models supports the contention that the method provides a reproducible measure of forest diversity. Together, these considerations suggest that the 0.1-ha protocol provides a good indication of the diversity and floristic composition of the forest community as a whole.

Relative Advantages of the 0.1-ha Transect Method

In any field study, the choice of the most appropriate sampling method is determined by the particular questions being asked and the logistical constraints on the research. A vast number of sampling methods have been used by different researchers, ranging from m^2 quadrat techniques appropriate for study of non-forest ecosystems to transect and large tree plot surveys for forested areas. Forested ecosystems have largely been sampled with transect or plot methodology that varies primarily in the extent of area surveyed, shape of the surveyed area, and size and life form of the included individuals.

Rapid sampling techniques such as Gentry's 0.1-ha protocol become attractive if the main research aim is to obtain representative comparable samples of floristic diversity and composition for between-site comparisons. On the other hand, if the main aim is to study within-site processes, such as tree recruitment, growth, and death, then the time and expense of installing permanent tree plots may be justified. However, standard tree plot protocols for measuring large trees only (> 10 cm dbh) are often used even when the main purpose is one-time floristic inventory, and in countless other cases supposedly "permanent" plots are in practice never recensused. Therefore it is important to consider the relative merits of the 0.1-ha transect in relation to 1.0-ha tree plot methodologies, for the particular purposes of sampling floristic diversity and composition.

1. **Speed.** Gentry's 0.1-ha transect technique allows forests to be sampled relatively quickly, making it appropriate in the following situations:

   A. **The 0.1-ha transect method is appropriate for questions that require data from a large number of sites.** Gentry was a uniquely knowledgeable, dedicated, intense, and enthusiastic worker, qualities that made him a prodigiously productive botanist. But his productivity alone does not explain the vast number of sites that he sampled; 0.1-ha transects are simply the quickest way to gain a representative sample in ultradiverse forests. Thus, while both 0.1-ha transects and 1-ha plots generate similar numbers of vouchers and so require a similar level of subsequent herbarium work, tree plots require nearly an order of magnitude more fieldwork than running a transect. For example, in upper Amazonia a 0.1-ha transect typically takes a team of three botanists up to three days of intense fieldwork, while establishing and inventorying a 1-ha tree plot may take three experienced botanists three weeks. Even though much less time is spent in the field, the number of individual plants ≥ 2.5 cm dbh sampled with the 0.1-ha protocol (300–450) is not much less than the number of trees ≥ 10 cm dbh typically found in standard 1-ha tree plots (450–650) because of the great number of individual plants between 2.5 and 10 cm diameter in tropical forests.

   As a result of the speed and efficiency of the technique, by 1993 Gentry had many more 0.1-ha samples than there were permanent plots in western South America. The small amount of permanent plot data available to Gentry was insufficient to demonstrate environmental correlates of diversity and floristic composition, or to suggest clearly where conservation efforts should be prioritized. By the late 1990s this was beginning to change, with the increase in standardization and data-sharing among permanent plot workers allowing larger-scale floristic comparisons (Terborgh & Andresen, 1998; Pitman et al., 1999, 2001), but the larger data set of 0.1-ha transects has still taught us many unique lessons about patterns in tropical forest plant diversity and composition. This has helped ecologists to proactively identify conservation priorities while there are still choices to be made (e.g., Foster et al., 1994), rather than waiting until the time in which all surviving forests may become de facto priority sites for conservation.

   B. **0.1-ha transects allow rapid salvage of scientific information from small patches of forests facing imminent destruction or degradation.** Some of the samples summarized here were from areas where permanent plot establishment was impractical due to immediate threat of

deforestation or impossible because of insufficient contiguous forest. Several sample sites have already been destroyed, including Centinela in Ecuador, and sites in Paramillo National Park and Serranía de Perija in Colombia. Given the slow pace of botanical exploration relative to the rate at which tropical forests are disappearing, the data from many more of these sites will likely represent forever the sum total of our floristic and ecological understanding of some of the most diverse and endemic-rich forests in the world. By sampling them first, we can at least retrieve some understanding that will benefit science and may yield vital insights for conservation. A prime example of both is Centinela, the isolated ridge-top cloud forest in western Ecuador where Cal Dodson and Gentry discovered no less than 90 new plant species endemic to the site (Dodson & Gentry, 1991). Centinela is now a banana plantation, and most of the endemic species are extinct, but at least we now have a record of part of what we have lost and know that any similar sites still surviving in western Ecuador deserve every effort for protection.

C. **The 0.1-ha transect method allows sampling of extremely inaccessible sites.** Some of the sites included in Gentry's data set were far from existing roads and located at places where transport of the personnel and supplies necessary to support them long enough to establish a permanent, tagged tree plot would have been difficult.

D. **Transect methodology is attractive for other biologists needing to characterize the forest rapidly.** Zoologists understandably prefer to spend more research time working with their animal study species than in establishing and inventorying tree plots, but still need to be able to describe the forest environment and to compare it with existing ecological data from elsewhere (Sussman, pers. comm. 1994). Several primatologists have therefore adapted the Gentry approach to help understand the composition of the forest and the resources available to primates (e.g., Emmons & Gentry, 1983).

E. **The 0.1-ha protocol is useful for measuring variation at a particular site using several replicates.** For this reason, some long-term site-specific forest inventory programs have combined a few 1-ha permanent plots with a greater number of temporary 0.1-ha transects (cf. Phillips & Raven, 1997; Vásquez, 1997).

2. **Floristic Completeness.** Sampling stems down to a 2.5 cm diameter cut-off is not only much more time-efficient than sampling only larger trees, but it also ensures that greater structural and taxonomic diversity are represented in the sample. The two major advantages include:

A. **Important plant groups are included in 0.1-ha transects that are often excluded from standard tree plots.** These include lianas, stranglers, and non-strangling hemiepiphytic root climbers, few of which ever reach the 10 cm diameter threshold. These plants have a much more significant impact on forest structure and function than suggested by their stem size. Compared to trees, they invest disproportionately small amounts of energy in building supporting structure (i.e., trunks, large branches, and buttress roots), and much greater energy in photosynthetic structures (leaves). Because of the fundamental difference in the allometry of climbing and non-climbing plants, stem diameter alone is a poor measure of climbers' ecological significance. Lianas are a particularly important component of tropical forests. They typically occupy 1–5% of the basal area, but contribute about 5% of the standing biomass, and up to 40% of total litterfall (Gentry, 1983a; Putz, 1983; Hegarty & Caballé, 1991). Lianas affect growth rates, mortality rates, and recruitment rates of trees (Putz, 1984a; Hegarty, 1991; Phillips & Gentry, 1994), and the variety and pervasiveness of liana defense mechanisms found in trees (Putz, 1984b; Hegarty, 1991) are suggestive of their impact on a forest's arboreal floristic composition. Lianas are not only ecologically more significant than suggested by results from tree plots, but liana size and diversity are also indicative of the maturity of many tropical forests

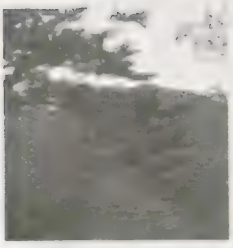
(Gentry, 1991a). Indeed, exceptional density of large lianas has been used as a criterion to prioritize forests for conservation (Keel et al., 1993).

Other plant groups are also captured by the Gentry method that are ignored in most tropical sampling techniques. Small tree and large shrub species, and occasionally some coarse-stemmed monocots, are included along with climbers, stranglers, and larger trees. Shrubs in Piperaceae and Melastomataceae, for example, are well represented in neotropical 0.1-ha transect data, but hardly ever reach the minimum 10 cm diameter for tree plots. Juveniles of larger trees are sampled as well, so that for dominant tree species at least it may be possible to gain a picture of their population structure. While Gentry's technique allows more detailed sampling of the forest community than most protocols, it still misses most of the individual plants in the forest. The cut-off point of 2.5 cm diameter excludes the youngest juveniles of all larger species, as well as ground herbs and epiphytes. These can be significant omissions, and the technique is not always useful for assessing the regeneration of species. Unsampled herbs and epiphytes can contribute substantially to tropical forest floras (e.g., Gentry & Dodson, 1987). However, in spite of these limitations the smaller cutoff point applied to 0.1-ha samples gives a broader view of the composition of the whole forest than most larger tree plots do.

Al Gentry in a canoe on the Sango River, Africa, ca. 1988.

B. **The 0.1-ha transect protocol yields a broader taxonomic sample than standard tree plots.** Gentry encountered numerous new taxa in his 0.1-ha transects. For example, the Pipeline Road site yielded 11 species new to Panama, at least 4 of them apparently undescribed, even though the former Canal Zone was one of the best known parts of the Neotropics. Similarly, the first 0.1-ha sample from Río Palenque, Ecuador, included 9 undescribed species, and several of the 90 new species found at Centinela ridge in Ecuador appeared in the transect. Gentry and colleagues used the large numbers of ecological collections generated from 0.1-ha samples to help write local florulas and regional checklists (Dodson & Gentry, 1978, 1991; Dodson et al., 1985; Gentry, 1986a, 1988c; Forero & Gentry, 1989; Foster & Gentry, 1991; Foster et al., 1991; Brako & Zarucchi, 1993; Vásquez, 1997). Many other botanists conducting floristic inventories use ecological sampling methods like Gentry's as a check on how thoroughly an area has been collected by traditional methods (e.g., W. D. Stevens, T. Wendt, pers. comm. 1995; Phillips & Raven, 1997). Of course, new taxa are frequently found in 1-ha tree plots as well, particularly in complex large families like Lauraceae and Sapotaceae (Gentry, 1994), and, while both temporary 0.1-ha transects and permanent 1-ha plots can aid floristic understanding, we are not aware of any analysis that compares the benefits of each approach.

To sum up, when the central purpose is to sample tropical forest diversity and composition the Gentry method has proven uniquely successful. The great number of small-area samples now completed has helped us understand how plant diversity is distributed over the earth's forests more completely and more rapidly than any other ecological sampling approach.



Results from Gentry's 0.1-Hectare Transect Data Set

This chapter provides an overview of the geographic and biogeographic range of sites sampled, highlights the main findings with respect to alpha diversity and global patterns of forest, and includes a brief review of Gentry's findings of the predictability of tropical forest composition.

Composition of the Data Set

Gentry and his colleagues collected transect data from 226 sites on all six continents with forest and on many tropical islands. Gentry himself guided the collection of 211 of the transects, and his collaborators contributed 15 additional sites by the time of his death (Table 1).

Table 1. Sites contributed by Gentry's collaborators.

All sites were collected with similar or identical methodologies to those used by Gentry.

Site	Country	Collaborators	Date
Benito Juarez	Mexico	J. Miller and J. Myers	May 1987
Berbice River	Guyana	G. Aymard, J. Comiskey, and F. Dallmeier	April 1993
Brise Fer	Mauritius	D. Lorence	1979
Chamela 1	Mexico	S. Bullock, E. Lott, and A. Solis-Magallanes	1985
Chamela 2	Mexico	S. Bullock, E. Lott, and A. Solis-Magallanes	1985
Chamela 3	Mexico	S. Bullock, E. Lott, and A. Solis-Magallanes	1985
El Corazón	Ecuador	W. Palacios, G. Tipaz	Dec. 1992
Kitlope 1	Canada	B. Boyle	July 1991
Kitlope 2	Canada	B. Boyle	July 1991
Motozintla	Mexico	J. Miller and J. Myers	May 1987
Northwest Branch	United States (Maryland)	J. Miller	?
Palanan	Philippines	L. Co	?
Round Hill–Slope	Jamaica	V. Kapos	Aug. 1978
Round Hill–Top	Jamaica	V. Kapos	Aug. 1978
Valley View Glades	United States (Missouri)	D. Faber-Langendoen and J. Miller	Oct. 1986

Summaries of the data from Chamela, Mexico (Lott et al., 1987), and Round Hill, Jamaica (Kapos, 1982), have been published elsewhere, but mostly Gentry's collaborators collected these sites to add to his growing body of data and help round out vegetation types that were poorly represented. The distribution of sites is not at all representative of world patterns of diversity, but rather reflects the areas where Gentry was able to work. While the data set is unrivaled in its worldwide representation of sites, it is also very strongly biased toward the Neotropics, which account for 178 of the sites. The relatively small number of Old World sites allow contrasts with the neotropical data, but they certainly do not provide an adequate representation of Paleotropical forest types. The distribution of transect sites includes locations in North America (28 sites), Mexico, Central America, and the West Indies (29 sites), South America (126 sites), Europe (5 sites), Africa, Madagascar, and the Mascarenes (18 sites), and Asia, Australia, and Oceania (20 sites). Gentry focused his own research on the Andean countries, and together Colombia (39 sites), Ecuador (23 sites), Peru (39 sites), and Bolivia (17 sites) account for 118 sites, or more than half of the entire data set on a worldwide basis. See maps at the beginning of each section in Chapter 7.

Section 1. Location of transects from North America, sites 1–28, p. 71.

Section 2. Location of transects from Mexico, Central America, and the West Indies, sites 29–57, p. 100.

Section 3. Location of transects from South America, sites 58–183, pp. 130, 134, 164, 199, 222.

Section 4. Location of transects from Europe, sites 184–188, p. 261.

Section 5. Location of transects from Africa, Madagascar, and the Mascarenes, sites 189–206, p. 267.

Section 6. Location of transects from Asia, Australia, and Oceania, sites 207–226, p. 286.

Gentry made a decided effort to survey as many different types of forests as possible. The later years of his transect studies were marked by trips to regions of the world that were unrepresented in his data set. His trips to India, Thailand, Malaysia, and Taiwan were made explicitly to collect data on the Asian forests that were the most poorly represented in his data and were necessary for truly global comparisons of diversity patterns. However, in all of his efforts he was driven by his fascination with high tropical diversity, and invariably he was drawn to sites where high diversity had been reported. It is no accident that of only 20 sites in eight countries surveyed in Asia, four yielded more than 200 species in 0.1 ha.

While the majority of Gentry's transects were from Colombia, Ecuador, Peru, and Bolivia, it was often assumed that he was biased toward the wettest forests in the world. In fact, only two of his lowland transects, Tutunendo and Mt. Cameroon, were from tropical rain forest as defined by Holdridge (1967) (> 8000 mm per year) and only 11 from tropical wet forest (> 4000 mm per year). The forest types most heavily sampled by Gentry are shown in Table 2. Thirteen of Holdridge's forest types were sampled seven or more times, and the data set includes at least one transect from 39 different life zones.

Table 2. Holdridge Life Zones most heavily sampled by Gentry and his colleagues.

Holdridge Life Zone	Number of Sites Sampled	Mean Species Number	Range of Species Numbers
Tropical moist forest	41	161	34–275
Tropical dry forest	24	92	38–169
Subtropical moist forest	13	88	33–219
Tropical wet forest	11	175	131–261
Tropical lower montane moist forest	10	104	40–162
Tropical premontane wet forest	10	140	89–194
Subtropical dry forest	10	62	31–100
Subtropical wet forest	9	111	42–210
Warm temperate moist forest	9	25	17–46
Tropical premontane moist forest	8	118	54–175
Tropical lower montane wet forest	7	103	68–138
Tropical montane wet forest	7	25	29–77
Warm temperate dry forest	7	25	23–29

As a result of the combination of extensive sampling over a broad geographic range and intensive sampling in the Andean countries of South America, different questions can be addressed by different portions of the data set. On a worldwide level it is possible to examine the extent that overall diversity, taxonomic composition, and to some extent forest structure, vary with key environmental variables. However, in South America, much more detailed questions can be asked because the large number of sites are often adequate to study the effects of a single variable, controlling for other factors.

At 19 sites Gentry collected more than a single transect (Table 3). In some cases this was merely an attempt to provide replicate, comparable samples and confirm that the methodology did yield consistent results, such as the two replicate transects collected on upland forest at Yanamono, Peru, and the pair collected at Cerro Neblina, Venezuela. However, at other sites, and particularly in Peru, Gentry collected multiple transects at an individual site, so that comparisons could be made between forests on different soil types. At Mishana, for example, he collected three transects, one each on seasonally inundated, non-flooded clayey lowland, and white sand substrates.

Table 3. Sites where Gentry and collaborators collected more than one transect. These were either replicates of the same locally dominant forest type or comparisons of different types of forest, as indicated.

Site	Country	No. of Transects	Vegetation Sampling
Kitlope	Canada	2	Replicates
Tyson	U.S. (Missouri)	2	Glade vs. woods
Guanacaste	Costa Rica	2	Upland vs. gallery forest
Round Hill	Jamaica	2	Slope vs. top forest
Chamela	Mexico	4	Replicates
Curuyuqui	Bolivia	2	Upland vs. riverine
Madidi	Bolivia	2	Ridge vs. non-ridge forest
Araracuara	Colombia	2	White-sand caatinga vs. clay
Río Palenque	Ecuador	2	Replicates
Mishana	Peru	3	Flooded, clayey, and white-sand forest
Tambopata	Peru	4	Upland, alluvial, swamp, and laterite forest
Yanamono	Peru	3	2 replicates of upland, and one tahuampa
Cerro Neblina	Venezuela	2	Replicates
Ndakan	Central African Republic	2	Inundated vs. non-inundated
Makokou	Gabon	2	Replicates
Beza	Madagascar	3	Deep sand vs. sandstone
Mudumalai	India	2	Replicates
Pasoh	Malaysia	2	Replicates
Sakaerat	Thailand	2	Replicates

Results of the Transect Studies

The sheer numbers that emerge from Gentry's data are astonishing, even before the correlations of diversity with environmental gradients and other forest information become apparent. Twenty-two of the 226 surveyed sites (Table 4) contained 200 or more species. While the high diversity of tropical forests was immediately apparent to the first explorers that reached them, these species densities were beyond even the expectations of most ecologists in the late 20th century. They indicate that moist, wet, and rain forests of the lowland tropics are often more than an order of magnitude more diverse than those of north temperate regions. At some sites, diversity was so great that all but a handful of species were represented by a single individual. Never before had this magnitude of diversity and fragility of tropical forests been so obviously demonstrated. With within-community diversity at almost unimaginable levels, individual species represented by small numbers of individuals were obviously much more susceptible to extinction than were species of temperate forests. Yet many of the predictions of what would happen to biological diversity as tropical forests were reduced in size were based on what was known about temperate forests, where species were invariably represented by much larger numbers of individuals.

Table 4. Twenty-two sites with 200 or more species. All but five are within 10 degrees of the equator, and only two receive less than 2000 mm of annual precipitation. Site names are shortened into codes (see Chapter 7 for full names).

Site	Country	No. of Species	Individuals	Fisher's α	Lat.	Elev. (m)	Precip. (mm)
Allpahuayo	Peru	275	401	386.1	3°S	165	3100
Tutunendo	Colombia	273	521	231.7	5°N	90	9000
Araracuara	Colombia	267	461	264.8	0°S	200	3190
Mishnfl	Peru	264	477	243.1	3°S	130	3100
Calima	Colombia	261	503	218.5	3°N	100	7420
Jenarohe	Peru	246	411	258.5	4°S	130	2520
Jatunsac	Ecuador	240	435	219.9	1°S	450	4100
Candamo	Peru	236	445	203.8	13°S	790	6760
Ducke	Brazil	235	360	293.8	3°S	80	2200
Constanc	Peru	233	366	276.0	4°S	160	3100
Yanam2	Peru	226	330	316.2	3°S	140	3100
Semengoh	Sarawak	223	474	164.3	1°N	100	4167
Indiana	Peru	221	391	210.4	3°S	130	3100
Pasoh40	Malaysia	221	381	219.8	3°N	100	2054
Linhares	Brazil	219	431	178.1	19°S	45	1400
Riomanso	Colombia	217	417	182.4	7°N	90	4000
Yanam1	Peru	214	303	324.5	3°S	140	3100
Perinet	Madagascar	213	726	101.6	18°S	980	1200
Pasoh30	Malaysia	210	378	194.5	3°N	100	2054
Nosyman	Madagascar	210	801	92.7	15°S	275	3500
Varirata	Papua New Guinea	209	474	142.9	9°S	30	6760
Riotavar	Peru	200	381	170.2	13°S	400	4000

Fourteen of the 22 ultradiverse sites were in Peru, Ecuador, and Colombia, obviously reflecting the intense sampling that took place in those countries, but Gentry also found sites with 200 or more species in the Old World in Madagascar, Malaysia, Papua New Guinea, and Sarawak. However, none of the African sites exceeded this value, and while there were fewer African sites sampled, they did include the wettest forests in Cameroon, where the highest diversity might be expected. Although these forests were reputed to be among the most diverse in Africa, they yielded only 121 species (Mount Cameroon) and 131 species (Korup National Park).

There are many ways of measuring diversity; species richness is just one. Another measure, Fisher's α, is less dependent on the number of individuals sampled and so is arguably more appropriate for making comparisons based on fixed-area samples where the number of individual plants varies from site-to-site. Fifteen of the sites had Fisher's α values greater than 200 (Table 5). Nine of these were in Peru, indicating the remarkable concentration of high-diversity forests where the Amazon basin meets the foothills of the Andes. More generally, Gentry's data clearly indicate that the highest diversity forests are found in the wet tropics, as 14 of the 15 sites with Fisher's α values greater than 200 and all but five of the 22 sites with more than 200 species were tropical moist, wet, or rain forests.

Table 5. Fifteen sites with Fisher's α (FA) values greater than 200. Eight of the 15 occur in an area of extremely high diversity in Peru between 3° and 4° south of the equator.

Site	Country	FA	No. of Species	Lat.	Elev. m	Precip. mm
Allpahuayo	Peru	386.1	275	3°S	165	3100
Yanam1	Peru	324.5	214	3°S	140	3100
Yanam2	Peru	316.2	185	3°S	140	3100
Ducke	Brazil	293.8	235	3°S	80	2200
Constanc	Peru	276.0	233	4°S	160	3100
Araracua	Colombia	264.8	267	0°S	200	3190
Jenarohe	Peru	258.5	246	4°S	130	2520
Mishnfl	Peru	243.1	264	3°S	130	3100
Sucusari	Peru	234.1	197	3°S	140	3100
Tutunend	Colombia	231.7	273	5°N	90	9000
Jatunsac	Ecuador	219.9	240	1°S	450	4100
Pasoh40	Malaysia	219.7	221	3°N	100	2054
Calima	Colombia	218.5	261	3°N	100	7420
Indiana	Peru	210.4	221	3°S	130	3100
Candamo	Peru	203.8	236	13°S	790	6760

The Fisher's α values are remarkable in circumscribing an area of particular high diversity in Amazonian Peru. Eight of the 15 sites with Fisher's α values greater than 200 were in Peru between 3° and 4° south of the equator, between 130 and 160 m in elevation, and annually received 2500–3100 mm of rainfall distributed throughout the year. Ducke, in adjacent Brazil, is also exceptionally diverse and, with 2200 mm of annual precipitation, is only slightly drier. While the high-diversity forests of northeast Peru have very high Fisher's α values, the more stem-dense sites with greater than 200 species (Table 4), especially from the Old World, are not among the most diverse sites when ranked by Fisher's α. In particular, it is interesting to note that although the Madagascan sites Perinet and Nosy Mangabé both have more than 200 species in 0.1 ha, their Fisher's α values are much lower at 101.6 and 92.7, respectively.

Gentry's data from ultradiverse tropical sites also documented surprising levels of sympatry. Most moist to wet tropical sites regularly had five or six sympatric species of large tropical genera such as *Acacia, Casearia, Ficus, Guarea, Guatteria, Inga, Otoba, Protium,* and *Virola*. There were seven species of *Inga* at Jatun Sacha and Indiana, eight at Yanamono 1, and 11 at Yanamono 2. Tutunendo yielded nine morphospecies of *Guatteria*. These patterns carried into the Old World as well, with seven species of *Cola* at Korup National Park and large numbers of sympatric species of *Dichapetalum* and *Diospyros* at most central African sites. Nosy Mangabé, on Madagascar, yielded an amazing 12 morphospecies of *Diospyros*, and Perinet, at a higher elevation, had eight species of the tree fern *Cyathea*. Most of the rich sites in Southeast Asia had relatively large numbers of *Shorea* species, which were often growing with many species of other Dipterocarpaceae as well.

Another result that is apparent from the data is the extreme density of individuals in some forests. Table 6 lists 14 sites where more than 500 individuals were encountered in 0.1 ha. The top seven sites, all with more than 600 individuals in 0.1 ha, were on islands, perhaps indicating that disturbance from hurricanes or cyclones prevents maturation of large individuals and instead maintains large numbers of smaller trees resulting in very stem-dense forests. One-hundred-thirty of the sites had between 300 and 500 individuals in 0.1 ha. In general, the temperate sites are less stem-dense than those of the Tropics ($p<0.001$).

Table 6. Fourteen sites with 500 or more individuals. The top seven are from islands.

Site	Country	Individuals	Precip. (mm)	Elev. (m)
Brisefer	Mauritius	1010	2400	50
Nosyman	Madagascar	801	3000–4000	250–300
Perinet	Madagascar	726	1200	980
Nanjensh	Taiwan	665	2500	310
Newcaldo	New Caledonia	654	2200	400
Roundslo	Jamaica	601	1200	150
Roundtop	Jamaica	553	1200	300
Sacram	Bolivia	550	2450	2380–2450
Ucumari	Colombia	550	3000	2620
Cedral	Colombia	549	3000	2140
Tutunendo	Colombia	521	9000	90
Incahuar	Bolivia	514	3500	1520–1560
Chamela2	Mexico	507	748	10–548
Calima	Colombia	503	7420	100

Correlations with Environmental Variables

While the general trends of increasing diversity as latitude and elevation decrease and precipitation increases had been apparent before, Gentry's was the first data set to provide quantitative documentation of these correlations on a worldwide basis. Multivariate statistical analyses show that forest diversity levels can be predicted from various environmental variables with surprising confidence (Clinebell et al., 1995; Gentry, 1995a, b; Givnish, 1999). This is illustrated more informally by the tables in this chapter. Table 4, for example, shows that most of the very species-rich sites are equatorial, lowland, and wet. The exceptions to these patterns are themselves interesting. For example, Candamo, in Peru, yielded 236 species, yet it is more than 13° south of the equator and a mid-elevation site at 790 m. Its high diversity can perhaps be explained by its extremely high annual rainfall of 6760 mm and an aseasonal climate with no distinct dry period. Perinet in Madagascar is more enigmatic. Located more than 19° south of the equator at 980 m elevation and with only 1200 mm of annual rainfall it still yielded 213 species. The large number of species encountered probably reflects the extremely high density of individuals, with 726 in 0.1 ha, and its diversity as measured by Fisher's α value is not exceptional.

The data set includes 19 sites from areas that receive more than 4000 mm of rainfall per year (Table 7) and in general, most exhibit high species numbers. Only temperate Alto de Mirador at 40°S latitude in Chile is a low-diversity site. Of the eight other sites with fewer than 150 species, Nangaritza, Ecuador, and La Planada and Cuervas, Colombia, were from higher elevation sites at 930, 1800, and 1670 m, respectively, Los Tuxtlas, Mexico, and La Selva, Costa Rica, were more than 10 degrees north of the equator, and Mt. Cameroon and Korup were from Africa where the gamma diversity is apparently not adequate to produce the high alpha diversity values that characterize parts of tropical America and Asia. Of the less diverse forests, only Bako Sarawak is a truly lowland tropical site close to the equator, at low elevation, and with high annual rainfall. However, what is missing from the climate data is an indication of seasonality of rainfall, and this may be responsible for a large amount of the variation between sites that otherwise seem quite similar. Gentry and others have clearly demonstrated that greater diversity occurs in less seasonal forests with equivalent annual rainfall (Gentry, 1982a, 1988a; Clinebell et al., 1995; Terborgh, 1992).

Table 7. Nineteen sites with greater than 4000 mm annual precipitation. Note that the sites that are very high in diversity are within 13° of the equator.

Site	Country	Precip. (mm)	Elev. (m)	No. of Species	Lat.	Fisher's α
Tutunend	Colombia	9000	273	231.7	5°N	90
MtCam	Cameroon	8000	121	68.5	4°N	225
Calima	Colombia	7470	261	218.5	3°N	100
Candamo	Peru	6760	236	203.8	13°S	790
Varirata	Papua New Guinea	6760	209	142.9	9°S	30
Korup	Cameroon	5460	131	69.4	5°N	100
Shiringa	Peru	5000	191	161.2	10°S	300
Nangarit	Ecuador	5000	*141	*132.9	4°S	930
Tuxtlas	Mexico	4953	102	51.3	18°N	185
Laplanad	Colombia	4300	129	63.4	1°N	1800
Murri	Colombia	4200	179	162.1	6°N	910
Semengoh	Sarawak	4167	223	164.3	1°N	100
Jatunsac	Ecuador	4100	240	219.9	1°S	450
RioManso	Colombia	4000	217	182.4	7°N	90
RioTavar	Peru	4000	200	170.2	13°S	400
LaSelva	Costa Rica	4000	137	90.7	10°N	100
Bakosar	Sarawak	4000	136	81.0	1°N	90
Cuervas	Colombia	4000	127	70.3	6°N	1670
Mirador	Chile	4000	16	3.5	40°S	800

*Only 0.07 ha sampled.

There has been discussion of a mid-elevation bulge in diversity (cf. Boyle, 1996), but Gentry's data do not appear to demonstrate this, at least as far as the alpha diversity values of plants ≥ 2.5 cm diameter are concerned. The data suggest that tropical alpha diversity is linearly and inversely related to elevation above about 500 m, although more samples are needed along regional altitudinal transects (cf. Lieberman et al., 1996; Vázquez & Givnish, 1998) to disentangle potentially confounding factors. Examination of the elevational distribution of species-rich sites with greater than 140 species (Table 8) shows that only one site with more than 200 species occurred above 500 m, and it (Candamo) was discussed earlier as exceptional in rainfall and aseasonality. One exception to this trend is that extremely high diversity sites are uncommon below 50 m (only Linhares and Varirata). It is not clear if this is a real pattern, perhaps reflecting an abundance of more swampy soil habitats at very low elevation, or simply a lack of appropriate sites sampled by Gentry.

Table 8. Relationship of total species number with elevational range in tropical forests. The numbers in the table refer to the number of transect sites with total species numbers that correspond to each 500 m of elevation.

Total Species Number	Elevational Range			
	0–500 m	500–1000 m	1000–1500 m	1500–2000 m
240 +	7			
220–239	6			
200–219	3	1		
180–199	5	2		
160–179	8	2		3
140–159	11	2	1	

Unfortunately, Gentry did not routinely collect soil samples at each site, so data are only available for some of the sites. In the Neotropics at least, Gentry's data show that soil quality apparently has little influence on community species richness, except in extreme cases such as ultra-poor white-sand soils or anaerobic swamp soils (Clinebell et al., 1995), somewhat contrary to earlier conclusions drawn from much smaller data sets (Huston, 1979, 1980).

As Gentry collected data at each site, he kept track of the size of all trees and carefully noted the types of each climber that he encountered (Gentry, 1982a). From his transects and other floristic surveys he was able to demonstrate that forest structure varied in predictable ways. His data show that lianas contribute a predictable and relatively constant percentage of the total number of species in Amazonian forests. His data clearly show that the number of hemiepiphytes increases as the number of free climbers decreases and that hemiepiphyte diversity is greatest at about 1800 m.

Gentry's initial intent in using transects to study forest structure and composition was to show the importance of Bignoniaceae as the dominant neotropical liana family, but he later expanded his compositional studies to demonstrate that neotropical forests were put together in decidedly nonrandom ways (Gentry, 1988a). His transects indicate that legumes dominate nearly all low-elevation neotropical and African forests, the only exceptions in the Neotropics being on very rich soils where Moraceae sometimes slightly outnumber them. The dominance of legumes in these forests mirrors the dominance of Dipterocarpaceae in Southeast Asian forests. In South America, as elevation increases legumes are consistently replaced by Lauraceae as the dominant family.

Gentry was able to show not only that the dominant family is predictable, but the familial and generic composition of forests in different environmental settings is also predictable (Gentry, 1988a). In the Neotropics a small group of families is responsible for about half of the number of species at any one site, and their patterns of importance vary in predictable ways. Thus Bignoniaceae, the most important liana family in neotropical forests, is often among the top 10 of all woody plant families in moist to rain forests, and in dry forests is usually second only to legumes.

While the main focus of Gentry's analyses was to show how global patterns of forest diversity, structure, and taxonomic composition varied along environmental gradients, his transects were sometimes adequate to address a variety of other questions about how forests are put together. Often a series of sites from a small geographic region could be used to indicate patterns of beta diversity (i.e., between-community species turnover) as well. Near Iquitos in upper Amazonian Peru, Gentry used transect data to claim that the combination of exceptional alpha diversity with high beta diversity resulted in world-record levels of diversity at the regional level in some tree families. Although Gentry's sample size was small, his claims are supported by results from new samples showing apparent habitat specificity in a large proportion of upper Amazon tree species (Ruokolainen et al., 1995; Vásquez & Phillips, 2000).

These 0.1-ha samples by Gentry and colleagues demonstrate that the substrate (e.g., drainage, structure, and nutrient concentrations) can have a substantial effect on forest composition (cf. Tuomisto et al., 1995; Vormisto et al., 2000). Distinct communities exist side-by-side at sites like Yanamono, Allpahuayo, and Mishana, even though there are no barriers to prevent a constant rain of seeds from each community into the other. Here, very nutrient-poor white-sand soils are juxtaposed with rich old alluvium, nutrient-poor lateritic soils, and various seasonally inundated and swamp forests, and these strong edaphic differences maintain well-differentiated parapatric communities by strongly favoring the growth or reproduction of some species over others.

In other cases, however, the transects support the view that the particular species that dominate a community are determined by stochastic processes. Thus, two adjacent pluvial forests on the same heavily leached clay soils in the Colombian Chocó demonstrate high turnover of species. Tutunendo is dominated by *Oenocarpus bataua* Mart., *Iryanthera ulei* Warb., *Croton tessmannii* Mansf., and *Bactris* cf. *coloniata* L. H. Bailey, while the only species with more than 10 individuals at Bajo Calima are *Mabea*

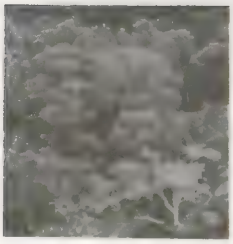
occidentalis Benth., *Faramea jefensis* Dwyer & M. V. Hayden, an undetermined species of *Phytelephas* Ruiz & Pavón, and *Faramea salicifolia* C. Presl. Likewise, three dry forest sample replicates at similar locations at Chamela in Mexico reveal that the species with the greatest density is different in each of the three samples (Lott et al., 1987).

Our survey, presumably incomplete, of the literature shows that more than 40 papers have been published so far based on the transect data cited in this book (Table 9). These include at least 44 authors in addition to Gentry himself, and clearly his transect studies have had the effect of interesting others in patterns of forest diversity and composition. He inspired others to conduct ecological surveys and add to the breadth of the data so that large-scale questions could be asked; he also encouraged students and colleagues to study more specific questions in greater detail. The very unevenness of geographic and climatological distribution of Gentry's transects often allowed him to provide initial speculation about a particular question that became an ideal starting point for the research of another.

Table 9. Scientific publications based fully or partly on analysis of 0.1-ha transects compiled for this book.

Sites	Reference
Berbice River	Aymard & Cuello (in prep.)
Neotropical	Clinebell et al. (1995)
Rio Palenque	Dodson & Gentry (1978)
Centinela, Juaneche, Rio Palenque	Dodson & Gentry (1991)
Juaneche	Dodson et al. (1985)
Pantropical	Emmons & Gentry (1983)
Global	Enquist & Niklas (2001)
Bajo Calima	Faber-Langendoen & Gentry (1991)
Neotropical	Forero & Gentry (1988)
Colombia	Forero & Gentry (1989)
Madidi	Foster & Gentry (1991)
Madidi	Foster et al. (1991)
Tambopata, Cuzco Amazónico, Río Távara, Río Candamo, Río Heath	Foster et al. (1994)
Neotropical	Gentry (1982a, b)
Global	Gentry (1983a)
Neotropical	Gentry (1983b)
Colombia, Ecuador	Gentry (1986a)
Neotropical	Gentry (1986b, c)
Global	Gentry (1988a)
Amotape, Capeira, Centinela, Rio Palenque	Gentry (1988c)
Global	Gentry (1991a)
Peru, Bolivia, Colombia, Ecuador	Gentry (1992a)
Pantropical	Gentry (1992b)
Bilsa	Gentry (1992c)
Neotropical	Gentry (1991b)
Africa, South America	Gentry (1993a)
Neotropical montane forests	Gentry (1995a)
Neotropical dry forests	Gentry (1995b)
Capeira, Juaneche, Rio Palenque	Gentry & Dodson (1987)
Peru	Gentry & Ortíz (1993)
Neotropical	Givnish (1999)

Sites	Reference
Round Hill Slope and Round Hill Top	Kapos (1982)
Jejuimi	Keel et al. (1993)
Brise Fer, Bon Courage	Lorence & Sussman (1986, 1988)
Chamela	Lott et al. (1987)
Linhares	Peixoto & Gentry (1990)
Neotropical	Phillips & Raven (1997)
Peru	Rose (1996)
Peru	Ruokolainen et al. (1995)
Allpahuayo, Mishana, Sucusari, Yanamono	Vásquez (1997)



A Scientific Resource for the Future

Gentry's research program was extraordinarily ambitious, especially given the limited resources he had available, and his labors have left ecologists a rich legacy of invaluable information and understanding. However, this book is not the final word. Gentry viewed his work as far from complete and the continuing work of his students and colleagues underscores that plenty remains through additional fieldwork and analyses, and there is also significant room for improvement in the method itself. This chapter proposes a number of considerations for building on Gentry's efforts by improving and extending a broadly comparable data set of forest composition and diversity.

1. Reducing Bias

As noted earlier, Gentry did not make fully randomized samples of forest communities. His samples both reflected and molded his personal concepts of what a forest community is and how it is bounded spatially and floristically. Undoubtedly some of Gentry's samples are affected by a personal bias to sometimes start the transects and orientate them so as to sample plants that he considered interesting. It is debatable whether this had much impact on the overall sample (cf. Chapter 2), but clearly it is desirable to modify the methodology to reduce the potential for this sort of personal bias. With this in mind, a number of investigators have recently developed modified versions of Gentry's technique (Table 10).

Table 10. Fixed-area techniques developed for temporary samples of neotropical forests. Note: The table is not intended to be exhaustive but represents the samples known to the authors as of 2001.

SOURCE	Data in this book?	n (samples)	Location	Area (ha)	Form	Extent (maximum dimension)	Min. dbh (cm)	Climbing plants included?
Gentry (published and unpublished)	Y	212	World-wide	0.1	2 x 50 m transects	> 200 m	2.5	Y
Aymard et al. (unpub.)	Y	1	Kwakwani Guyana	0.1	2 x 50 m transects	> 200 m	2.5	Y
Boyle (unpub.)	Y	2	British Columbia, Canada	0.1	2 x 50 m transects	> 200 m	2.5	Y
Co (unpub.)	Y	1	San Isidro Philippines	0.1	2 x 50 m transects	> 200 m	2.5	Y
Faber-Langdendoen & Miller (unpub.)	Y	1	Missouri, U.S.	0.1	2 x 50 m transects	> 200 m	2.5	Y
Kapos (1982)	Y	2	Clarendon, Jamaica	0.1	10 x 10 m sub-plots	???	3.0	N, Y
Lorence & Sussman (1986, 1988)	Y	1	Mauritius	0.1	2 x 50 m transects	> 200 m	2.5	Y
Lott et al. (1987)	Y	3	Jalisco, Mexico	0.1	2 x 50 m transects	> 500 m	2.5	Y
Miller & Myers (unpub.)	Y	2	Chiapas, Mexico	0.1	2 x 50 m transects	> 200 m	2.5	Y
Miller (unpub.)	Y	1	Maryland, U.S.	0.1	2 x 50 m transects	> 200 m	2.5	Y
Palacios & Tipaz (unpub.)	Y	1	Ecuador	0.1	2 x 50 m transects	> 200 m	2.5	Y
Aymard & Cuello (unpub.)	N	3	Venezuela	0.1	2 x 50 m transects	> 200 m	2.5	Y
Boyle (1996)	N	35	Mexico, Ecuador, Costa Rica	0.1	40 x 100 m grid	100 m	2.5	Y
Comiskey (1999)	N	4	Bolivia	0.1	2 x 50 m	100 m	2.5	Y
Duivenvoorden & Lips (1995)	N	95	Colombia	0.1	20 x 50m	50 m	10.0	N
Phillips & Vásquez (unpub.)	N	12	Loreto, Peru	0.1	180 x 100 m grid	180 m	2.5	N
Meave (unpub.)	N	12	Oaxaca, Mexico	0.1	???	???	2.5	???
Phillips et al. (1999)	N	100	Madre de Dios, Peru	0.1	180 x 100 m grid	180 m	2.5	N
Monteagudo (unpub.)	N	10	Madre de Dios, Peru	0.1	180 x 100 m grid	180 m	2.5	N
Ruokolainen et al. (1995)	N	8	Loreto, Peru	0.16, 0.125	4 x (20 x 20 m), 2 x (25 x 25 m)	Ca. 1 km	2.5	N
Ruokolainen et al. (unpub.)	N	10	Loreto, Peru	0.16	4 x (20 H 20 m)	Ca. 1 km	2.5	N
Solas (unpub.)	N	16	Jalisco, Mexico	0.1	???	???	2.5	???
Stern et al. (unpub.)	N	???	Ecuador	0.1	180 x 100 m grid	180 m	2.5	???
Stern et al. (unpub.)	N	5	Madre de Dios, Peru	0.1	180 x 100 m grid	180 m	2.5	???

SOURCE	Data in this book?	n (samples)	Location	Area (ha)	Form	Extent (maximum dimension)	Min. dbh (cm)	Climbing plants included?
Vásquez (1997)	N	5	Loreto, Peru	0.1	2 x 500 m transect	500 m	2.5	Y
Vásquez (unpub.)	N	2	Amazonas, Peru	0.1	180 x 100 m grid	180 m	2.5	N
Vázquez & Givnish (1998)	N	43	Jalisco, Mexico	0.1	48 x 60 m grid	60 m	2.5	Y
TOTAL		> 486 samples ≥ 2.5 cm dbh (+ 95 samples ≥ 10 cm dbh)						

Most of these techniques have reduced the potential for subjectivity by sampling according to a predetermined shape, while retaining the core principles of sampling down to 2.5 cm dbh and spreading the 0.1-ha sampled area across a large extent of forest. Examples include sampling in a ca. 0.5-ha area with a grid of five 2 × 100 m transects (Boyle, 1996), developed specifically for sampling montane forests with their steep slopes, as well as sampling lowland forests in a 1.8-ha area with a grid of ten 2 × 50 m transects (Stern, unpublished; Vásquez & Stern, unpublished; Vásquez & Phillips, unpublished; Phillips et al., 1999) (Fig. 1). These two "modified Gentry methodologies" alone account for a further ca. 250 samples (cf. Table 10).

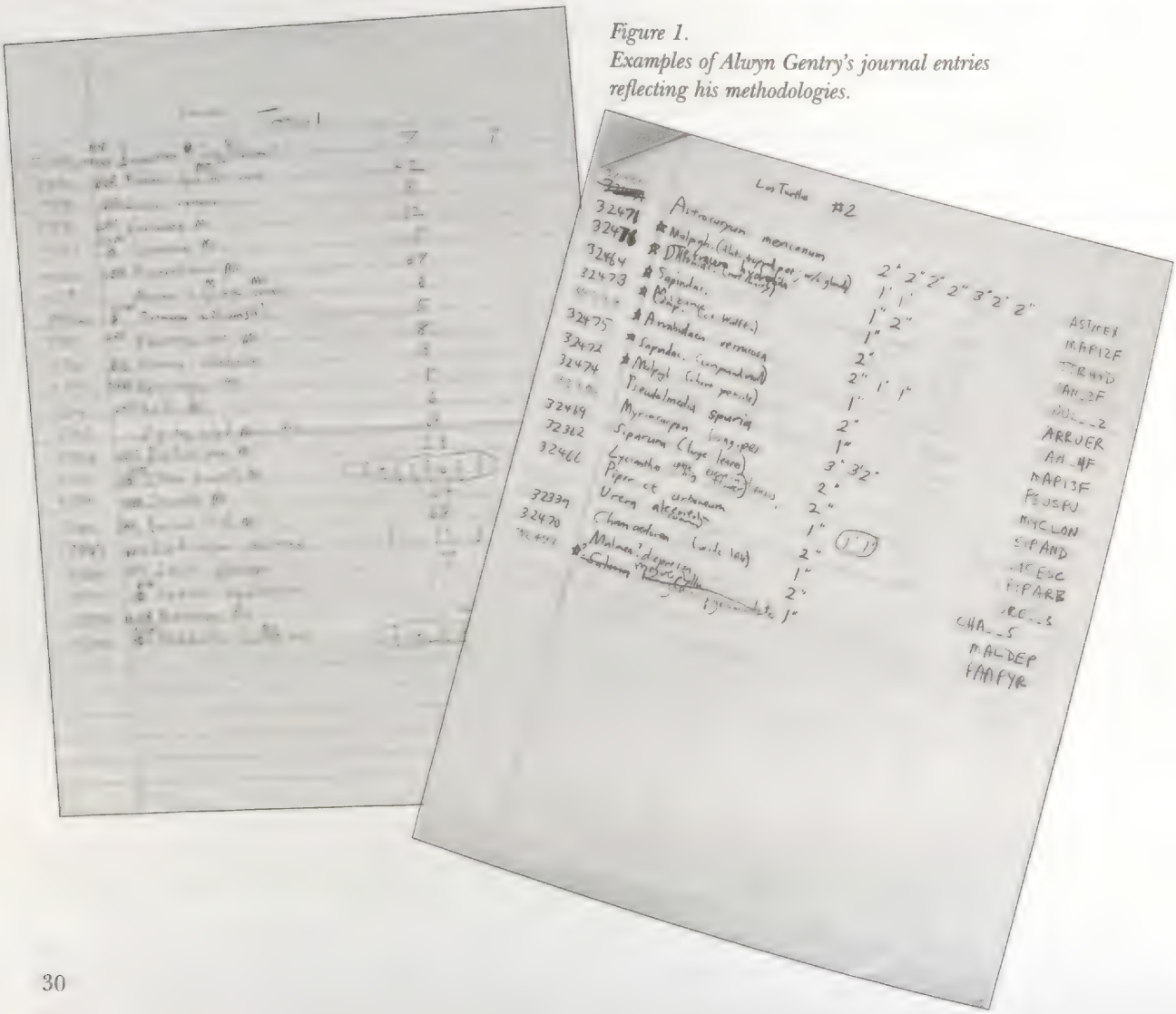


Figure 1.
Examples of Alwyn Gentry's journal entries reflecting his methodologies.

2. Comparability Between Existing 0.1-Hectare Protocols

The main aim in developing these modified methodologies has been to reduce the potential for personal bias. Still, the question arises as to what extent data collected by the various different methods are comparable with one another. There is a clear need for calibrating results between the different methods in terms of diversity measures and floristic composition. In the absence so far of quantitative comparisons among 0.1-ha methods, it is possible to make some common-sense predictions that might be tested empirically. For example, in the same forest community, and all other things being equal:

a. The larger the extent of the sample area, the greater the topographic heterogeneity encountered, which could be predicted to yield greater species diversity per 0.1-ha sample. There is some evidence from the 50-ha plot on Barro Colorado Island to suggest that this effect may, however, be rather small (elongated 10 × 1000 m and 20 × 500 m 1-ha tree plots have only slightly greater alpha diversity than square 100 × 100 m plots (Condit et al., 1996)).

b. Varying the area or extent of samples should not by itself cause a consistent bias in the composition of taxa sampled. Therefore, all methodologies that sample at least according to the same criteria for size and growth-form should be comparable in terms of floristic composition.

c. Varying the size criteria (e.g., ≥ 2.5 cm vs. ≥ 10 cm diameter) or the growth-form criteria (e.g., including vs. excluding climbing plants) will result in sampling different elements of the flora. Therefore any pair of methodologies with different size or growth-form criteria will not be comparable unless matching subsets can be extracted for analysis.

These considerations lead to some predictions about the likely inter-comparability of data generated by the current 0.1-ha methods in terms of alpha-diversity (Table 11) and floristic composition (Table 12).

Table 11. Presumed cross-comparability of alpha-diversity scores across methods. Y = Yes; N = No; P = Possibly (requires testing and/or calibration); S = If sub-sampled for comparable area or for non-climbing plants.

SOURCE	Gentry, & contributors to this volume	Aymard & Cuello (unpub.)	Boyle (1996)	Comiskey (1999)	Duivenvoorden & Lips (1995)	Phillips & Vásquez (unpub.), Phillips et al. (1999)	Ruokolainen et al. (1995), Ruokolainen et al. (unpub.)	Stern et al. (unpub.)	Vásquez (1997)	Vásquez (unpub.)	Vázquez & Givnish (1998)
Gentry, & contributors to this volume	Y	P	P	P	N	P, S	P, S	P	P	P, S	N
Aymard & Cuello (unpub.)		Y	P	P	N	P, S	P, S	P	P	P, S	P
Boyle (1996)			Y	Y	N	P, S	P, S	P	P	P, S	P
Comiskey (1999)				Y	N	P, S	P, S	P	P	P, S	P
Duivenvoorden & Lips (1995)					Y	N	N	N	N	N	N
Phillips & Vásquez (unpub.), Phillips et al. (1999)						Y	P, S	Y	P	Y	P, S
Ruokolainen et al. (1995), Ruokolainen et al. (unpub.)							Y	P, S	P, S	P, S	N
Stern et al. (unpub.)								Y	P	Y, S	P
Vásquez (1997)									Y	P	P
Vásquez (unpub.)										Y	P, S
Vázquez & Givnish (1998)											Y

Table 12. Presumed cross-comparability of floristic composition measures across methods. Y = Yes; N = No; P = Possibly (requires testing); S = If sub-sampled for non-climbing plants.

SOURCE	Gentry, & contributors to this volume	Aymard & Cuello (unpub.)	Boyle (1996)	Comiskey (1999)	Duivenvoorden & Lips (1995)	Phillips & Vásquez (unpub.), Phillips et al. (1999)	Ruokolainen et al. (1995), Ruokolainen et al. (unpub.)	Stern et al. (unpub.)	Vásquez (1997)	Vásquez (unpub.)	Vázquez & Givnish (1998)
Gentry, & contributors to his volume	Y	Y	Y	Y	N	Y, S	Y, S	Y	Y	Y, S	Y
Aymard & Cuello (unpub.)		Y	Y	Y	N	Y, S	Y, S	Y	Y	Y, S	Y
Boyle (1996)			Y	Y	N	Y, S	Y, S	Y	Y	Y, S	Y
Comiskey (1999)				Y	N	Y, S	Y, S	Y	Y	Y, S	Y
Duivenvoorden & Lips (1995)					Y	N	N	N	N	N	N
Phillips & Vásquez (unpub.), Phillips et al. (1999)						Y	Y	Y	Y	Y	Y, S
Ruokolainen et al. (1995), Ruokolainen et al. (unpub.)							Y	Y, S	Y, S	Y	Y, S
Stern et al. (unpub.)								Y	Y	Y, S	Y
Vásquez (1997)									Y	Y	Y
Vásquez (unpub.)										Y	Y, S
Vázquez & Givnish (1998)											Y

3. Ensuring Comparability Among 0.1-Hectare Forest Samples

Full standardization of forest sampling protocols across the world is perhaps impossible to achieve—given that many teams of investigators are involved, each working in different environments, and often addressing different kinds of questions. However, a realistic goal would be to establish a minimum set of standards in sampling and reporting floristic and diversity data that would allow data sets to be spliced together and analyzed as a whole. There are good examples of recent precedents of just this kind of approach (minimum shared protocols are being employed in 1-ha and 50-ha permanent tree plots (e.g., Condit, 1997; Dallmeier & Comiskey, 1998a), so it should be possible to develop the same for 0.1-ha samples. Different researchers have used different criteria to measure dbh (or maximum diameter), particularly for non-tree growth forms, and this further complicates comparisons between data sets. Gentry included hemiepiphytes (often completely excluded in other surveys) with diameters of aerial roots greater than or equal to 2.5 cm at or below breast height. Furthermore, his inclusion criterion for lianas was 2.5 cm maximum diameter at any observable point along their length. Although this latter criterion seems impossible to replicate, in practice it introduces relatively little error, as the thickest part of any liana stem is usually near the ground. Other workers have used diameter at ground level as a means of standardizing liana measurement. While the relative merits of these criteria for inclusion and measurement are open to debate, it is clear that they must be accounted for in comparison of data from different sites.

With this in mind, we propose here a set of basic standards for conducting 0.1-ha samples, and for reporting the results (Table 13).

Table 13. Suggested minimum standards for maximizing comparability among temporary floristic samples of mature tropical forests.

A: Shared Protocols for Sampling:	
General sampling approach	stratified random sampling (strata selected according to purpose; at least one sample per stratum)
Maximum dimension of each sample	≤ 500 m, preferably ≤ 200 m
Internal shape of each sample	sub-samples selected either at random or by a systematic grid
Shape of each sub-sample	long and thin, e.g. 2 x 50 m
Total area sampled	≥ 0.1 ha
Minimum plant size	2.5 cm dbh
Criteria for inclusion and measurement of non-tree life forms	≥ 2.5 cm diameter at or below breast height
Taxa identification	to species, with herbarium voucher for each species
Soil sampling	top 0–30 cm of the mineral soil; at least 10 point samples taken and thoroughly mixed
B: Minimum Set of Attributes Reported:	
All aspects of Sampling Protocols (A)	
Collection/Locality Data:	
Country	
Region/ Department	
Site name	
Elevation	
Geographic coordinates	
Date	
Investigators and contact details	
Collector and number sequence(s) for vouchers	
Herbaria where vouchers deposited	
Environmental Data:	
Annual rainfall (and source)	
Rainfall seasonality (and source)	
Mean annual temperature (and source)	
C: Minimum Set of Data Published or Reported:	
Number of individual plants	
Number of individual self-supporting plants	
Basal area of plants	
Basal area of self-supporting plants	
Number of species of plants	
Number of species of self-supporting plants	
Fisher's Alpha	
Species list	
All of the above standardized to 0.1-ha if sample area is > 0.1-ha	
Where possible, report values for climbers separately from self-supporting plants.	
Soil pH (KCl and H_2O), concentration of key elements (N, P, K, Ca, Mg, Al), organic matter content, textural analysis (clay:silt:sand)	

Table 14. Soil analyses completed for some 0.1-hectare forest samples.

Y = Yes; N = No.

Floristic data	Soil data published	N (sites)	pH	Total N	P	K	Ca	Mg	Al	Fe	Organic Matter	Texture	Laboratory
Gentry (this volume)	Clinebell et al. (1995)	60	N	Y	Y	Y	Y	Y	Y	Y	N	N	Camas Laboratory (Montana, USA)
Gentry (this volume)	Clinebell et al. (1995)	9	N	Y	Y	Y	Y	Y	Y	Y	N	N	Micro-Macro International (Georgia, USA)
Phillips & Vásquez (unpub.)	N	12	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Agricultural Research Centre (Finland)
Phillips et al. (1999)	N	100	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Agricultural Research Centre (Finland)
Ruokolainen et al. (1995)	Ruokolainen et al. (1995)	8	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Agricultural Research Centre (Finland)
Ruokolainen et al. (unpub.)	N	10	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Agricultural Research Centre (Finland)
Stern et al. (unpub.)	N	5	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Agricultural Research Centre (Finland)

A soil analysis should be conducted wherever possible as part of the basic standards for collecting and reporting floristic information. Soil data associated with each new site would add substantially to the wealth of information, and provide a better basis for interpreting the factors affecting the distribution and abundance of plant species. Ideally, these data should include at least soil pH and available N, P, K, Ca, Mg, Al, and Fe. A summary of the data collected from a variety of sites is included in Table 14.

4. Geographic Scope of Sampling

The data set amassed by Gentry and his colleagues is tremendously uneven in its geographic representation (Table 15). Large numbers of transect sites in the Andean countries of South America, and replicate samples at a variety of sites around the world (cf. Table 3), allow detailed questions about forest structure and composition on a local level. However, the sparse coverage of paleotropical sites hinders comparison between forests of the Old and New Worlds. Extending Gentry's conclusions on the relationship between environmental and geographic gradients (Gentry, 1988a) so that they address Old World forests will require significantly more sampling in tropical Africa, Madagascar, tropical Asia and China, islands of the Malay archipelago, and Australia.

Table 15. Geographic distribution of transect sites collected by Gentry and collaborators.

North America	28
Mexico, Central America, West Indies	29
South America	126
Europe	5
Africa, Madagascar, Mascarenes	18
Asia, Australia, and Oceania	20

5. Some Priorities for Future Work

The 0.1-ha transects sampled by Gentry and others can form the basis of an even more comprehensive and powerful data set, one that can be used to address both a broader and a more refined set of key questions in ecology and conservation. To take full advantage of the potential for comparative analyses, we suggest several priorities to be considered for future ecofloristic research:

a. New research can help calibrate the main strands in the existing data set, and so enable them to be drawn together to enable comparisons of forest diversity, composition, or structure within all 500 or so existing samples. So far there are almost no examples of teams using different techniques in the same forest site—an essential prerequisite for calibration. A field campaign would employ one or more of the modified methodologies, and focus on regions and specific sites well sampled by Gentry (e.g., some of the lowland forest sites in Amazonian Peru, or surviving montane forest sites in Ecuador and Colombia). This could lead to direct empirical tests of the predictions made above (section 2).

b. Conversely, the concentration of sites in Colombia, Ecuador, Peru, and Bolivia limits the potential for global-level analysis using the data set. The paucity of data from Old World sites severely limits comparison on a worldwide basis, but even within tropical America, data for comparison beyond the Andean countries are sparse. Greater emphasis on poorly sampled ecoregions (Olson & Dinerstein, 1998) elsewhere in the Neotropics and beyond would help rectify this situation.

c. The Gentry 0.1-ha methodologies and the modified versions are very good at assessing forest diversity and composition, but are not designed specifically to evaluate forests in terms of economic value or cultural significance. Yet quantitative sampling methods are essential to compare human use of forest resources between localities and appropriate to document human use of forest resources at a single site. Gentry's transect methods, or other ecological sampling methods, can bring an innovative approach to ethnobotanical questions and allow more rigorous analysis of data (Phillips & Gentry, 1993a, 1993b).

   Biodiversity assessment must account for these human-centered values as they will have a major impact on the future survival and condition of forests. New research is needed to help integrate Gentry-style rapid biodiversity assessment with assessment techniques that focus on economic resources (e.g., forestry surveys) or on the broader values attached to forests by people (e.g., Participatory Rural Appraisal techniques), and develop more comprehensive biodiversity assessment protocols (e.g., Watt et al., in press).

d. Our final recommendation is simply a plea to use a minimum common set of standards for fieldwork and for reporting metadata whenever possible. If applied widely this will guarantee that the data set becomes ever more valuable. If not, the result will be a growing collection of post-Gentry case studies, interesting locally but of little consequence beyond the immediate study area.

Images of the Forests Surveyed by Al Gentry

This chapter provides photographs of the forests that Al Gentry and his colleagues surveyed, the landscapes where they occur, and a few of the plants that comprise the forests. The intention of the chapter is to give readers some additional feel for the transect sites, beyond what can be imagined from the data provided on the transect pages. While every effort has been made to standardize the nomenclature of forest types and to provide as much information as possible on the transect pages, photographs that show the structure, density, and landscape of the forests provide a complementary visual documentation and hopefully this will help bring to life the forests included in the survey.

At each site, Gentry often photographed the landscape of forests from a distance, giving a feel for the canopy, often an indication of the climate or season, and the general topography of the site. He also photographed forest interiors, providing a sense of size, density, and composition of the trees and lianas in a particular forest. In addition, he often photographed the local base, a camp, field station, or hotel, and almost always took pictures of his colleagues and students who worked with him in the field. As he moved from site to site, he noted that many forests had special characters, such as large or thick leaves, prevalence of a single family, or convergence of a particular leaf shape or life form. Gentry often created montages of the leaves or specimens at the end of the day and photographed these to convey a sense of why a particular forest was special; several of these composites are included in this chapter.

Gentry was an energetic and prolific photographer, and his slide collection contains images of the majority of the sites included in this survey. Unfortunately, the conditions in the forests during the times that he worked were not often conducive to obtaining the best photographs, and hence many of his images have a dark quality and do not merit inclusion here. For this reason, only a representative sample of his slides documenting the transect sites is included in this chapter, but Gentry's full collection of slides is available in the archives of the library of the Missouri Botanical Garden. Gentry's enthusiasm for botany, cultural diversity, and the exciting things one encounters when traveling are all documented in the vast collection of slides he took during his career. In spite of the frantic pace at which Gentry lived his life, he always took time to label his slides as soon as they were developed, so the whole collection is carefully labeled, even if it is in his rather difficult to read handwriting. These slides include a tremendous collection of images of individual plant species, all carefully labeled with voucher numbers so that their

identity can be confirmed by consulting vouchers deposited at the Missouri Botanical Garden. A selection of these photographs has been made available on the World Wide Web and can be found at <http://mobot.mobot.org/W3T/Search/vast.html>. These images are all attached to the records of plant names in the TROPICOS database.

In addition to the photos of individual plants and forests that one might expect of a botanist, Gentry photographed billboards, political advertisements, markets, towns, and especially the people he encountered in each of the countries and cultures he visited.

Cool temperate moist forest (beech/maple) at the Cary Arboretum (site 16) in New York, U.S.A.

Warm temperate moist forest at Burling Tract (site 27) in Virginia, U.S.A.

Interior of warm temperate dry forest at Babler State Park (site 9) in Missouri, U.S.A., during April before leaves have emerged.

Tropical dry forest at Finca La Pacífica in Guanacaste (site 31), Costa Rica.

Edge of warm temperate moist forest at University of Florida Horticulture Woods near Gainesville Study Area (site 6) in Florida, U.S.A.

Tropical wet forest at Magsasay near La Selva (site 33), Costa Rica.

Tropical moist forest south of Madden Dam (site 54), Panama.

Al Gentry in subtropical wet forest on Isla Providencia (site 29), Colombia, ca. 1993.

Interior of boreal wet forest at Ruissalo (site 186), Finland. Note near lack of an understory layer.

Interior of boreal wet forest at Uppsala (site 188), Sweden.

Leaves from boreal wet forest at Uppsala (site 188), Sweden.

Warm temperate wet forest dominated by Abies *at Chiba (site 212), Japan.*

Leaves from warm temperate wet forest at Chiba (site 212), Japan.

Interior of subtropical wet forest at Luquillo (site 56), Puerto Rico, with Prestoea montana.

Canopy of subtropical dry forest at Chamela (sites 43–46), Mexico, during the wet season with trees in full leaf.

Canopy of subtropical dry forest at Chamela (sites 43–46), Mexico, during the dry season with trees leafless.

Interior of warm temperate montane rain forest at Puyehue (site 89), Chile.

Warm temperate montane rain forest with Nothofagus pumila, *Puyehue (site 89), Chile.*

Warm temperate wet forest with Nothofagus, *Bosque de San Martín (site 88), Chile.*

Warm temperate montane rain forest with Dacrydium, Nothofagus, *and* Fitzroya *at Alto de Mirador (site 87), Chile.*

Canopy of subtropical lower montane moist forest at Parque El Rey (site 58), Argentina.

Canopy of subtropical lower montane moist forest at Parque El Rey (site 58), Argentina.

Tropical lower montane wet forest at Ucumarí (site 123), Colombia.

Leaves of Fabaceae and Lauraceae from tropical wet forest at Bajo Calima (site 97), Colombia. An unusual number of species in this forest have giant leaves.

Interior of tropical lower montane wet forest at Finca Mehrenberg (site 107), Colombia.

Tropical lower montane wet forest at Carpanta (site 100), Colombia.

Interior of tropical wet forest at Bajo Calima (site 97), Colombia.

Canopy of tropical wet forest at Bajo Calima (site 97), Colombia.

Kogui houses outside of tropical premontane wet forest at Alto de Mirador (site 92), Colombia.

Canopy of tropical moist forest at Anchicayá (site 93), Colombia.

Interior of tropical lower montane wet forest at Finca Mehrenberg (site 107), Colombia.

Interior of tropical premontane rain forest at La Planada (site 111), Colombia.

Al Gentry using clipper poles at Río Palenque (sites 140–141), Ecuador, ca. 1980.

Interior of tropical moist forest at Río Palenque (sites 140–141), Ecuador.

Tropical wet forest at Centinela (site 127), Ecuador.

View into canopy of tropical wet forest at Centinela (site 127), Ecuador, showing abundant epiphytes.

Tropical wet forest at Centinela (site 127), Ecuador, after clearing. Gentry described many new species from this site and used it often as an example of species under threat before they were even discovered and named.

Tropical premontane moist forest at Huamaní (site 132), Ecuador.

Tropical moist forest (seasonally inundated Tahuampa) at Yanamono (site 176), Peru.

Nestor Jaramillo with stilt-rooted Pourouma *in interior of tropical moist forest at Allpahuayo (site 146), Peru. With 276 species in 0.1 ha, this was the most species-rich forest surveyed by Gentry.*

Canopy of tropical lower montane moist forest at Venceremos (site 175), Peru.

Tropical lower montane moist forest at Cutervo Nacional Park (site 155), Peru.

Tropical dry forest near Tarapoto (site 174), Peru.

Tropical premontane moist forest at Cerros de Amotape (site 150), Peru.

Swamp in interior of tropical premontane wet forest at Tambopata (site 172), Peru.

Interior of tropical premontane wet forest on terra firme at Tambopata (site 170), Peru.

Interior of tropical premontane moist forest at Cocha Cashu (site 153), Peru.

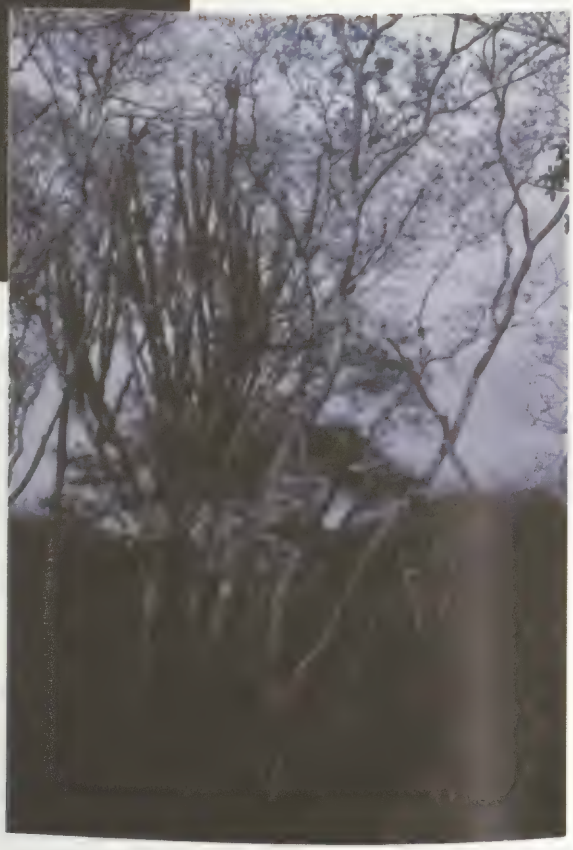
Tropical premontane wet forest along Río Heath (site 166), Peru.

Suspended walkway through canopy of tropical premontane rain forest at Shiringamazú (site 168), Peru.

Tropical moist forest at Saul (site 143), French Guiana.

Interior of tropical moist forest at Saul (site 143), French Guiana.

Canopy of tropical premontane moist forest at Carajas (site 80), Brazil.



Subtropical lower montane moist forest with arborescent cactus at Chaquimayo (site 62), Bolivia.

Canopy of subtropical wet forest at Alto Madidi (site 67), Bolivia.

Tropical dry forest along route to Belinga (site 194), Gabon.

Interior of tropical dry forest at Belinga (site 194), Gabon.

Interior of tropical dry forest at Makokou (sites 195–196), Gabon.

Subtropical moist forest at Ankarafantsika (site 200), Madagascar.

Subtropical lower montane moist forest at Perinet (site 202), Madagascar.

George Schatz in interior of subtropical wet forest at Nosy Mangabe (site 201), Madagascar.

Subtropical wet forest at Nosy Mangabe (site 201), Madagascar.

Interior of tropical rain forest at Mt. Cameroun (site 191), Cameroon.

Mike Fay's base camp at Ndakan (site 192), Central African Republic.

Tropical wet forest at Bako National Park (site 213), Sarawak.

Interior of tropical wet forest at Semengoh Forest Preserve (site 217), Sarawak.

Gordon McPherson collecting with clipper poles in subtropical lower montane wet forest at Rivière des Pirogues (site 218), New Caledonia.

Epiphyte-laden trees in interior of tropical premontane dry forest at Varirata National Park (site 220), Papua New Guinea.

Leaves from tropical premontane wet forest at Nadugani (site 211), India.

Setting up transect line in interior of tropical premontane dry forest at Mudumalai (sites 209–210), India.

Subtropical moist forest at Sakaerat (sites 225–226), Thailand.

Subtropical wet forest at Khao Yai National Park (site 224), Thailand.

Tropical premontane wet forest at Genting Highlands (site 214), Malaysia.

Diversity of liana cross sections from tropical premontane moist forest at Cocha Cashu (site 153), Peru.

Introduction to the 0.1-Hectare Transect Site Pages

Chapter 7 consists of a single page each for the 226 sites surveyed by Gentry and his colleagues, summarizing the geographical, ecological, diversity, and taxonomic data for each site. Each page is designed with a consistent format to allow easy comparison of information between sites. Each geographical section is preceded by a map indicating the geographic locality of each site.

Geographic and Collection Data

Several identifiers are provided for each site. Sites are numbered sequentially and organized by major geographical region: Temperate North America; Mexico, Central America, and the West Indies; South America (with subdivisions for Bolivia, Colombia, Ecuador, and Peru); Europe; Africa; and Tropical Asia and Australasia. Within each geographical section, site pages are alphabetical by country and roughly in the order of the abbreviated name that Gentry used for each site. The brief name, in general, was the name that Gentry used on the file folders in which he stored the data. Following the abbreviated name for each site, an acronym is provided in parentheses, which is the identifier for the table of raw data available on the World Wide Web at <http://www.mobot.org/MOBOT/research/applied_research/gentry.html>. During the time that Gentry accumulated the transect data, and in the time since, when it has been edited into consistent order, the names of sites have been problematic. While Gentry maintained precise locality information for each site, he needed a series of short, unique file names for each site. He generally used a brief one- to three-word abbreviation of each site on the folder in which he maintained his data, and the associated acronyms were used to identify the computer files. However, the place names themselves create

confusion; for example, there are sites named Alto de Mirador in both Chile and Colombia (identified by different acronyms). As the number of sites, and therefore the potential for ambiguity, grew, Gentry and his colleagues continually edited the site names, and some changes were made in the final stages of editing this volume. Therefore, in a few cases, site page order deviates slightly from alphabetical order, as names for sites were changed to avoid ambiguity but numbers and acronyms were preserved to maintain concordance with the maps and World Wide Web database.

Precise locality information is provided for each site including at least country, first-order political division (state, province, department), second-order political division if known (county, municipality, etc.), and a narrative description of the location where collecting occurred. The narrative site description should provide adequate information so that the site can be precisely located on a map. Following the locality description, geographical coordinates are provided. All of the transect surveys included here preceded the routine use of portable Geographic Positioning Systems (GPS), and latitude and longitude were assigned by Gentry by consulting maps of the region. Gentry never finished attributing coordinates to some sites. They have been assigned as part of completing this volume.

The collectors who participated in surveying each site are listed following the locality information. When available, the collection numbers of the vouchers are also provided, and these refer to the first collector's number series. In general, Gentry vouchered each new species encountered at each site. However, he did not usually collect vouchers for the temperate sites, feeling that the floras were well known enough to avoid confusion over species identities. There are also regular instances where well known palm species were not vouchered because of the difficulty of collecting specimens, and Gentry felt he knew the species well enough. In a few cases Gentry's notes were insufficient for us to locate vouchers, and this has been indicated. This is particularly true when data were provided to Gentry by a colleague, rather than for those sites that Gentry collected himself. Complete information on individual species and the vouchers with which they are associated can be obtained from the original transect data available on the Web at <http://www.mobot.org/MOBOT/research/applied_research/explan.html> and only the range of voucher numbers for each locality is provided on the site pages.

A complete set of Gentry's collections are deposited at the Missouri Botanical Garden (MO), and a duplicate was left in at least one collaborating institution in each of the countries where he worked. The collections of the following contributors are deposited as indicated:

Gerardo Aymard (US)
Leonardo Co (GH, MO)
Alcebiades Custodo Filho
Calaway Dodson (MO)
Valerie Kapos (MO)
Don Faber-Langendoen (MO)
David Lorence (MO)
Emily Lott (MEXU)
James S. Miller (MO)
Walter Palacios (MO)
A. Peixoto
Peter B. Phillipson (MO)
O. Rangel
Gracielza dos Santos
George E. Schatz (MO)

Finally, the dates on which the collecting took place are provided when known. In general, most temperate sites were collected in a single day, but those in the Tropics took longer. Some sites were only partially surveyed and are included only if four or more transect lines ($\geq$ 0.04 ha) were completed. Others were completed in more than one visit.

Ecological Data

While perhaps not his original intent, Gentry's consuming passion became examination of how environmental variables affected alpha diversity, taxonomic composition, and forest structure. He was

particularly interested in the correlations between latitude, elevation, and precipitation and various floristic characteristics of forests. Gentry did not collect soil samples in his early transects, partly due to lack of funds to support their export and analysis, but also because he initially felt that soils were less important than other environmental factors in determining overall patterns of diversity.

Gentry generally included a description of the type of forest in which he was working with the locality data that he recorded. In the New World Tropics, these descriptors often corresponded with the Holdridge Life Zone classification system (Holdridge, 1967; Holdridge et al., 1971) and in other parts of the world they were descriptive of forest structure, as Holdridge maps were unavailable. However, as the Holdridge system is based on climatic, rather than vegetation, characteristics, it has been possible to retrospectively assign Holdridge Life Zone names based on latitude, elevation, and precipitation values (Holdridge, 1967). As Gentry scrupulously recorded these data, we assigned consistent Life Zone names to each site. Knowing the latitude and elevation of each site, it is possible to assign each to an altitudinal belt, roughly corresponding with mean annual biotemperature. This, together with the annual precipitation in millimeters, determines a given site's Life Zone. In general, the climate-derived Holdridge Life Zone names seem to correlate very well with diversity variables.

Gentry recorded the elevation using a Thommen altimeter at each site where he collected data. For those sites where a single elevation is presented, it can be assumed that the elevation varied little, while the maximum elevational range is presented for those sites with more variation in terrain. In a few cases, elevation was not recorded in Gentry's notes, and we assigned it retrospectively by consulting available maps.

Precipitation data were always problematic. Recorded data are scant for many regions of the Tropics, particularly the remote areas where Gentry often based his studies. The values provided for rainfall are those Gentry recorded, and he seldom left any indication of how the values were obtained. For many of the more recently collected sites, no rainfall values were available in his notes, so we assigned them by consulting atlases (White, 1906; Baker, 1936; Rand McNally, 1952; Jackson, 1961; Díaz P., 1969; World Meteorological Organization, 1970; Ryan, 1972; World Meteorological Organization, 1975; Instituto Geográfico Militar del Ecuador, 1977; Farley, 1979; World Meteorological Organization, 1979a, b; Instituto Geográfico del Perú, 1989). When rainfall values have been assigned retrospectively, this fact is indicated on the site pages by an asterisk.

Soil data are available for about 30% of the sites. The results from some of his early transects are summarized in Stark (1970, 1971a, b, 1978) and Clinebell et al. (1995). Because of the lack of data for most localities, no soil data are provided in the site pages, but references are provided to articles where data are available if they exist.

The size of the area sampled is also indicated on each page. Gentry conducted incomplete surveys of many sites, often limited by available time in one place, but only those sites with more than four transect lines (400 m^2) complete were included. For those sites that were incompletely sampled, Gentry often made an attempt to return later and complete the work. An extreme example of this would be the first site sampled, "Guanacaste Upland," in which a transect line was added on 14 June 1990 to the seven originally collected in 1971 to make up the 800 m^2 total for the site.

The final attribute provided in this section is an estimate of Fisher's α (Fisher et al., 1943). The simplest and most widely reported diversity statistic for ecological samples is the number of species recorded, which we give for each Gentry sample in the next section. However, because the size of each sample is based on a fixed area (0.1 ha), and not on a fixed number of individuals, the stem density of each forest has an impact on the number of species recorded. Extreme stem density values found in some tropical island forests (such as Brise Fer, with 1010 stems) can be up to four times as great as in some equatorial continental forests, and even less dramatic differences can still distort species richness comparisons among sites. Most diversity indices, including Fisher's α, are based on the relationship in a sample between the number of stems of each species and the number of species. Values of these indices are still

affected by the stem density of a sample, but usually somewhat less so than the simple number of species. Of the various candidate diversity indices, we have selected Fisher's α because it is widely used in the literature and because the relative value of Fisher's α in small tropical forest tree samples from different forest sites has been shown to provide a good estimate of the relative overall diversity of each forest (Condit et al., 1996; Condit et al., 1998). Fisher's α is estimated by: number of species = alpha * ln(1 + number of stems/alpha).

Diversity and Floristic Data

Two tables summarizing the overall diversity and floristic data from each site follow the locality information and ecological data. The first includes a summary of the number of species, and number of individuals found at each site with a total and subtotals for each growth form: trees/shrubs, lianas, and hemiepiphytes. The sum of the subtotals for number of families may exceed the total number of families, as individual families may have representatives with different growth forms at each site. Basal area is reported in the same manner. Gentry assigned plants to liana and hemiepiphyte categories at the time of collection. Most lianas start as free-standing plants, and some hemiepiphytes develop into large free-standing trees, so it is possible occasionally for the same species to feature in both tree and liana or hemiepiphyte categories. We have chosen to accept his assignment as it was based on his visual interpretation of each plant in question.

A second table provides information about the taxa dominating at each site, showing the top 10 families, both in terms of individuals and number of species, and the top 10 species, in terms of number of individuals. In some temperate sites, there were not 10 entries for each of these categories, so the listings are complete, but at most tropical sites the listings give only the most dominant of many taxa.

It was often not possible to obtain complete identifications of all of the plants encountered, particularly at the most diverse tropical sites. In those situations, Gentry sorted the plants into morphospecies, grouping all similar individuals, and he generally used a morphological name like "drip tip" or "purple fruits." In the summary tables, these are reported with "sp." signifying a missing species identification, followed by a number indicating the individual morphospecies at that site. Thus, an individual identified as a member of the genus *Psychotria* but not identified to species would be labeled *Psychotria* sp. 1, indicating that it was the first unidentified member of the genus encountered at that site. If the same species was encountered again, the same name was used. *Psychotria* sp. 2 would be the second unidentified species of the genus and different from *Psychotria* sp. 1. However, the morphospecies numbers are comparable within individual sites only, so *Psychotria* sp. 1 at one site is probably not the same species as *Psychotria* sp. 1 at a different site. Specimens that remained unidentified to species were compared at a given site, but the monumental task of matching unidentified material between sites was not undertaken.

While most plants encountered were identified to genus, there are uncommon exceptions and these are presented in the same manner as unidentified species. Thus, Melastomataceae gen. 12 at Incahuara, Bolivia, is the twelfth genus of Melastomataceae encountered at that site, but it has not yet been identified to genus. In the even more rare case where taxa were completely unidentified, they were labeled as Indet. Thus, Indet. gen. 1 sp. 1 at Incahuara was one of the rare plants that completely baffled Gentry so that he was unable to recognize even the family.

The 0.1-Hectare Transect Site Pages

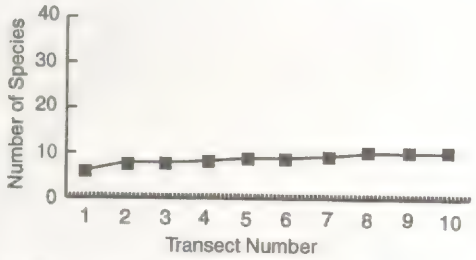
Section 1. Location of transects from North America, sites 1–28.

1 – Kitlope 1, British Columbia, Canada
2 – Kitlope 2, British Columbia, Canada
3 – Mt. St. Hilaire, Ontario, Canada
4 – Matthieson Hammock, Florida
5 – San Felasko Hammock, Florida
6 – University of Florida Horticulture Woods, Florida
7 – Cedar Bluffs, Indiana
8 – Northwest Branch, Maryland
9 – Babler State Park, Missouri
10 – Cuivre River State Park, Missouri
11 – Rock Creek, Missouri
12 – Tyson Reserve, Glade, Missouri
13 - Tyson Reserve, Woods, Missouri
14 – Valley View Glades, Missouri
15 – Indian Cave State Park, Nebraska
16 – Cary Arboretum, New York
17 – Montgomery Place, New York
18 – Bankamp State Park, Ohio
19 – Heuston Woods, Beech-Maple, Ohio
20 – Heuston Woods, Mixed Forest, Ohio
21 – Timberline, Oregon
22 – Jones Mill, Penn.
23 – Laurel Ridge, Penn.
24 – Kane, Allegheny Forest, Penn.
25 – Tidroute, Allegheny Forest, Penn.
26 – Wild Basin Preserve, Texas
27 – Burling Tract, Virginia
28 – Potomac, Virginia

SITE NO. 1: Kitlope 1 (kitlope1)
LOCALITY: Canada. British Columbia: Kitlope watershed. Alluvial flats at junction of Tezwa and Kitlope Lake.
COORDINATES: 53°04'20" N, 127°49'31" W
COLLECTORS: B. Boyle
VOUCHERS: None
DATES: July 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Cool temperate rain forest
ELEVATION: 20 m
ANN. RAINFALL: 2,100 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 3.58



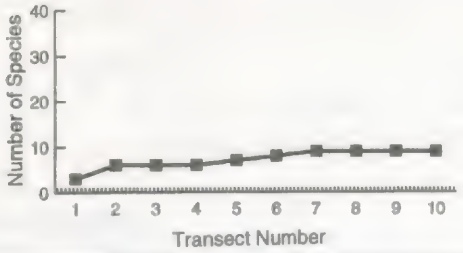
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	9	0	0	9
NUMBER OF INDIVIDUALS	55	0	0	55
NUMBER OF FAMILIES	5	0	0	5
BASAL AREA	16.28	0	0	16.28 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Pinaceae 5	Pinaceae 37	*Picea sitchensis* - 15
	Cornaceae 11	*Cornus stolonifera* - 11
	Betulaceae 4	*Tsuga heterophylla* - 9
	Araliaceae 2	*Thuja plicata* - 6
		Alnus rubra - 4
		Abies lasiocarpa - 4
		Abies amabilis - 3
		Oplopanax horridum - 2

SITE NO. 2: Kitlope 2 (kitlope2)
LOCALITY: Canada. British Columbia: Kitlope watershed, N side of Kitlope River. Broad alluvial flats approximately 3.5 km upstream from Kemano Community Association cabins.
COORDINATES: 52°12'20" N, 127°47'30" W
COLLECTORS: B. Boyle
VOUCHERS: None
DATES: July 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Cool temperate rain forest
ELEVATION: 10 m
ANN. RAINFALL: 2,100 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 3.47



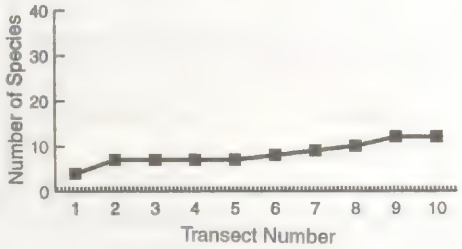
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	9	0	0	9
NUMBER OF INDIVIDUALS	43	0	0	43
NUMBER OF FAMILIES	6	0	0	6
BASAL AREA	11.13	0	0	11.13 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Pinaceae 4	Pinaceae 23	*Tsuga heterophylla* - 12
	Caprifoliaceae 8	*Picea sitchensis* - 9
	Rosaceae 6	*Sambucus callicarpa* - 8
	Cornaceae 3	*Pyrus fusca* - 6
	Araliaceae 2	*Cornus stolonifera* - 3
		Oplopanax horridus - 2

SITE NO. 3: Mt. St. Hilaire (mtsthila)
LOCALITY: Canada. Montreal.
COORDINATES: 45°37' N, 73°35' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Cool temperate nival rain tundra
ELEVATION: Not available
ANN. RAINFALL: 750 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 3.06



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	12	0	0	12
NUMBER OF INDIVIDUALS	152	0	0	152
NUMBER OF FAMILIES	6	0	0	6
BASAL AREA	5.58	0	0	5.58 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Aceraceae 4	Fagaceae 78	*Fagus grandifolia* - 75
Betulaceae 2	Aceraceae 51	*Acer saccharum* - 44
Fagaceae 2	Pinaceae 18	*Tsuga canadensis* - 17
Pinaceae 2	Betulaceae 2	*Quercus rubra* - 3
	Oleaceae 2	*Acer pennsylvanicum* - 3
		Fraxinus americana - 2
		Acer rubrum - 2
		Acer spicatum - 2

SITE NO. 4: Matthieson Hammock (matthies)
LOCALITY: U.S.A. Florida: Dade Co., Matthieson County Park, Coral Gables.
COORDINATES: 25°43' N, 80°16' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical moist forest
ELEVATION: 15 m *
ANN. RAINFALL: 1,375 mm *
SOIL DATA: Not available
AREA SAMPLED: 700 m²
FISHER'S ALPHA: 10.62

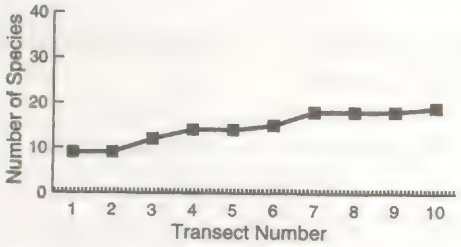
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	27	5	1	33
NUMBER OF INDIVIDUALS	204	19	4	227
NUMBER OF FAMILIES	15	4	1	20
BASAL AREA	3.28	0.055	0.33	3.66 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Sapotaceae 5	Myrtaceae 62	*Eugenia axillaris* - 55
Arecaceae 3	Polygonaceae 39	*Coccoloba diversifolia* - 38
Myrtaceae 3	Sapotaceae 29	*Sideroxylon foetidissimum* - 17
Lauraceae 2	Caricaceae 12	*Carica papaya* - 12
Polygonaceae 2	Myrsinaceae 11	*Ardisia escallonoides* - 11
Sapindaceae 2	Simaroubaceae 11	*Nectandra coriacea* - 9
Simaroubaceae 2	Lauraceae 10	*Mastichodendron foetidissimum* - 9
Vitaceae 2	Sapindaceae 9	*Exothea paniculata* - 8
	Nyctaginaceae 7	3 species with 7
	Oleaceae 7	

SITE NO. 5: San Felasko Hammock (sanfelas)
LOCALITY: U.S.A. Florida: Alachua Co., San Felasko Hammock, SE of Gainesville.
COORDINATES: 29°41' N, 82°26' W
COLLECTORS: A. Gentry, E. Zardini
VOUCHERS: 51662 - 51681
DATES: 11 August 1985

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate moist forest
ELEVATION: 30 m
ANN. RAINFALL: 1,375 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 5.24



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	17	2	0	19
NUMBER OF INDIVIDUALS	170	22	0	192
NUMBER OF FAMILIES	13	2	0	15
BASAL AREA	4.55	0.03	0	4.58 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 3	Betulaceae 75	*Carpinus caroliniana* - 38
Aquifoliaceae 2	Fagaceae 27	*Ostrya virginiana* - 37
Betulaceae 2	Aquifoliaceae 25	*Vitis rotundifolia* - 21
	Vitaceae 21	*Quercus laurifolia* - 20
	Hamamelidaceae 12	*Ilex verticillata* - 19
	Juglandaceae 12	*Liquidambar styraciflua* - 12
	Nyssaceae 6	*Carya glabra* - 12
	Magnoliaceae 5	*Ilex opaca* - 6
	Rubiaceae 2	*Nyssa sylvatica* - 6
	Tiliaceae 2	2 species with 5

SITE NO. 6: U. Florida Horticulture Woods (ufhortic)
LOCALITY: U.S.A. Florida: University of Florida Horticulture Woods, NE of Gainesville.
COORDINATES: 29°40' N, 82°20' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate moist forest
ELEVATION: 50 m
ANN. RAINFALL: 1,375 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 11.72

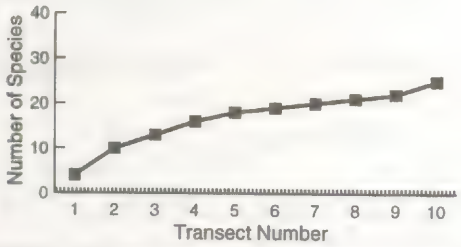
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	27	5	0	32
NUMBER OF INDIVIDUALS	148	20	0	168
NUMBER OF FAMILIES	15	4	0	19
BASAL AREA	3.61	0.019	0	3.63 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 4	Fagaceae 32	*Magnolia grandiflora* - 22
Rosaceae 4	Magnoliaceae 22	*Quercus laurifolia* - 18
Oleaceae 3	Betulaceae 19	*Carya glabra* - 18
Betulaceae 2	Juglandaceae 18	*Ostrya virginiana* - 17
Cornaceae 2	Vitaceae 15	*Vitis rotundifolia* - 13
Ericaceae 2	Rosaceae 13	*Persea borbonia* - 10
Nyssaceae 2	Oleaceae 12	*Quercus michauxii* - 9
Vitaceae 2	Lauraceae 10	*Fraxinus caroliniana* - 9
	Ericaceae 5	*Prunus umbellata* - 5
	Hamamelidaceae 5	*Liquidambar styraciflua* - 2

SITE NO. 7: Cedar Bluffs (cedarblu)
LOCALITY: U.S.A. Indiana: Johnson Co.
COORDINATES: 39°46' N, 86°09' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate moist forest
ELEVATION: 215 m *
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 7.98



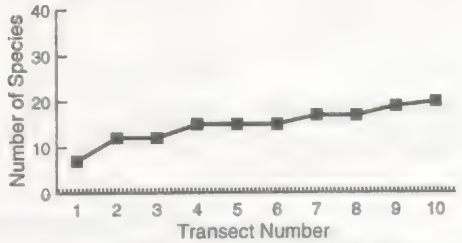
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	24	1	0	25
NUMBER OF INDIVIDUALS	171	4	0	175
NUMBER OF FAMILIES	14	1	0	15
BASAL AREA	3.54	0.0053	0	3.54 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 4	Aceraceae 102	*Acer saccharum* - 99
Juglandaceae 4	Ulmaceae 15	*Ulmus rubra* - 10
Aceraceae 2	Fagaceae 14	*Fraxinus americana* - 7
Betulaceae 2	Juglandaceae 10	*Quercus prinoides* - 6
Oleaceae 2	Oleaceae 9	*Celtis occidentalis* - 5
Ulmaceae 2	Betulaceae 5	*Ostrya virginiana* - 4
	Cornaceae 4	*Cornus florida* - 4
	Vitaceae 4	*Vitis vulpina* - 4
	Rosaceae 3	6 species with 3
	3 families with 2	

SITE NO. 8: Northwest Branch (nwbranch)
LOCALITY: U.S.A. Maryland: Montgomery Co., Northwest Branch of Anacostia River, between Four Corners & White Oak. SW facing slopes above river, E of Rte. 29.
COORDINATES: 39°02' N, 77°02' W
COLLECTORS: J. Miller
VOUCHERS: None
DATES: Summer 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate moist forest
ELEVATION: 20 m
ANN. RAINFALL: 1,060 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 5.66



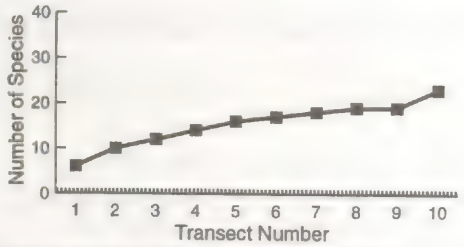
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	19	1	0	20
NUMBER OF INDIVIDUALS	187	1	0	188
NUMBER OF FAMILIES	13	1	0	14
BASAL AREA	5.78	0.0013	0	5.78 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 5	Ericaceae 59	*Kalmia latifolia* - 59
Juglandaceae 3	Cornaceae 37	*Cornus florida* - 37
	Fagaceae 31	*Nyssa sylvatica* - 24
	Nyssaceae 24	*Fagus grandifolia* - 14
	Aceraceae 9	*Acer rubrum* - 9
	Oleaceae 9	*Chionanthus virginicus* - 9
	Betulaceae 5	*Quercus alba* - 6
	Juglandaceae 5	*Quercus rubra* - 6
	Lauraceae 3	*Carpinus caroliniana* - 5
	Magnoliaceae 2	*Quercus primus* - 4

SITE NO. 9: Babler State Park (bablersp)
LOCALITY: U.S.A. Missouri: Jefferson Co., Babler State Park.
COORDINATES: 38°32' N, 90°40' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES: 19 August 1973

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate dry forest
ELEVATION: 150 m
ANN. RAINFALL: 930 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 7.60



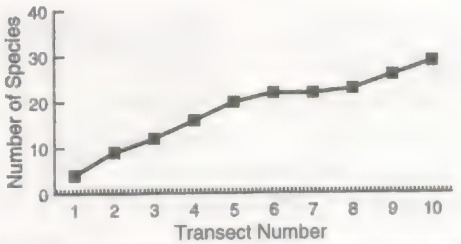
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	20	3	0	23
NUMBER OF INDIVIDUALS	140	9	0	149
NUMBER OF FAMILIES	12	1	0	13
BASAL AREA	1.69	0.0044	0	1.69 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Juglandaceae 4	Cornaceae 36	*Cornus florida* - 36
Fagaceae 3	Oleaceae 24	*Fraxinus americana* - 24
Ulmaceae 3	Fagaceae 22	*Quercus alba* - 17
Vitaceae 3	Ulmaceae 17	*Ulmus rubra* - 11
Aceraceae 2	Juglandaceae 14	*Acer saccharum* - 8
	Aceraceae 11	*Carya tomentosa* - 6
	Vitaceae 9	*Carya cordiformis* - 5
	Moraceae 5	*Morus rubra* - 5
	Fabaceae 4	4 species with 4
	3 families with 2	

SITE NO. 10: Cuivre River State Park (cuivre)
LOCALITY: U.S.A. Missouri: Lincoln Co., Cuivre River State Park.
COORDINATES: 39°01' N, 91°00' W
COLLECTORS: A. Gentry, J. Miller, C.W. Hamilton
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate dry forest
ELEVATION: 140 m
ANN. RAINFALL: 930 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 8.76



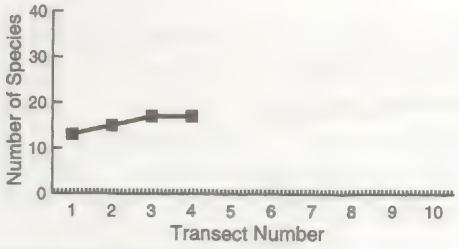
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	27	2	0	29
NUMBER OF INDIVIDUALS	223	8	0	231
NUMBER OF FAMILIES	13	2	0	15
BASAL AREA	3.94	0.012	0	3.96 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Juglandaceae 5	Aceraceae 65	*Acer saccharum* - 63
Fagaceae 4	Betulaceae 51	*Ostrya virginiana* - 51
Ulmaceae 4	Fagaceae 28	*Quercus alba* - 23
Aceraceae 2	Juglandaceae 20	*Fraxinus americana* - 16
Fabaceae 2	Oleaceae 17	*Carya ovata* - 13
Oleaceae 2	Ulmaceae 17	*Ulmus rubra* - 10
Rosaceae 2	Moraceae 7	*Morus rubra* - 7
	Vitaceae 7	*Vitis vulpina* - 7
	Cornaceae 5	*Cornus florida* - 5
	Rosaceae 5	4 species with 3

SITE NO. 11: Rock Creek (rockcree)
LOCALITY: U.S.A. Missouri: Madison Co.
COORDINATES: 37°30' N, 90°15' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate moist forest
ELEVATION: 285 m *
ANN. RAINFALL: 1,125 mm *
SOIL DATA: Not available
AREA SAMPLED: 400 m^2
FISHER'S ALPHA: 6.03



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	17	0	0	17
NUMBER OF INDIVIDUALS	95	0	0	95
NUMBER OF FAMILIES	15	0	0	15
BASAL AREA	1.57	0	0	1.57 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Betulaceae 2	Fagaceae 18	*Carya tomentosa* - 16
Fagaceae 2	Juglandaceae 16	*Nyssa sylvatica* - 13
	Nyssaceae 13	*Acer rubrum* - 12
	Aceraceae 12	*Pinus echinata* - 10
	Pinaceae 10	*Quercus alba* - 10
	Rosaceae 7	*Quercus coccinea* - 8
	Betulaceae 6	*Amelanchier arborea* - 7
	Ericaceae 3	*Ostrya virginiana* - 5
	3 families with 2	*Vaccinium arboreum* - 3
		3 species with 2

SITE NO. 12: Tyson Reserve (tysongla)
LOCALITY: U.S.A. Missouri: Jefferson Co., Tyson Research Center, chert glade.
COORDINATES: 38°30' N, 90°31' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate dry forest
ELEVATION: 150 m
ANN. RAINFALL: 932 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 8.68

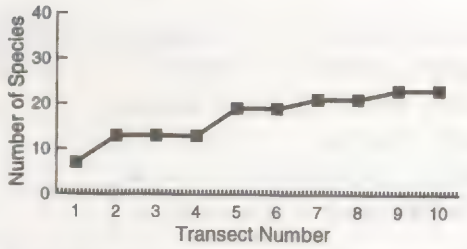
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	24	2	0	26
NUMBER OF INDIVIDUALS	163	2	0	165
NUMBER OF FAMILIES	10	1	0	11
BASAL AREA	2.29	0.01	0	2.29 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 7	Fagaceae 104	*Quercus rubra* - 28
Juglandaceae 5	Juglandaceae 22	*Quercus velutina* - 27
Rosaceae 4	Rosaceae 14	*Quercus alba* - 24
Ulmaceae 2	Aceraceae 7	*Carya cordiformis* - 16
Vitaceae 2	Cornaceae 4	*Quercus marilandica* - 14
	Lauraceae 4	*Amelanchier arborea* - 9
	Rhamnaceae 3	*Quercus macrocarpa* - 8
	Ulmaceae 3	*Acer rubrum* - 7
	Vitaceae 2	*Cornus florida* - 4
		Sassafras albidum - 4

SITE NO. 13: Tyson Reserve (tysonwoo)
LOCALITY: U.S.A. Missouri: Jefferson Co., Tyson Research Center, woods.
COORDINATES: 38°30' N, 90°31' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate dry forest
ELEVATION: 150 m
ANN. RAINFALL: 932 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 6.94



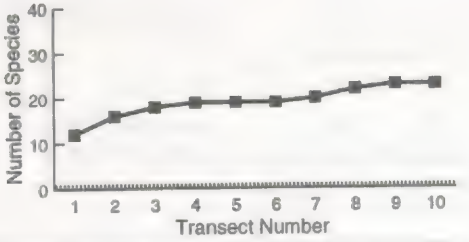
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	20	3	0	23
NUMBER OF INDIVIDUALS	175	9	0	184
NUMBER OF FAMILIES	10	2	0	12
BASAL AREA	2.80	0.0059	0	2.81 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Juglandaceae 5	Cornaceae 61	*Cornus florida* - 61
Fagaceae 4	Fagaceae 52	*Quercus alba* - 26
Ulmaceae 3	Juglandaceae 28	*Carya ovata* - 20
Oleaceae 2	Lauraceae 12	*Quercus rubra* - 18
Vitaceae 2	Oleaceae 12	*Sassafras albidum* - 12
	Vitaceae 7	*Fraxinus americana* - 11
	Ulmaceae 4	*Quercus velutina* - 7
	Aceraceae 2	*Vitis* sp.1 - 5
	Anacardiaceae 2	*Carya ovalis* - 3
	Betulaceae 2	*Carya tomentosa* - 3

SITE NO. 14: Valley View Glades (valleyvi)
LOCALITY: U.S.A. Missouri: Jefferson Co., Valley View Glades Natural Area, NW facing slope.
COORDINATES: 38°15' N, 90°37' W
COLLECTORS: J. Miller, D. Faber-Langendoen
VOUCHERS: None
DATES: 18 October 1986

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate dry forest
ELEVATION: 225 m
ANN. RAINFALL: 930 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 6.94



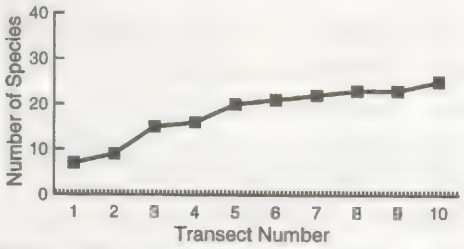
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	22	1	0	23
NUMBER OF INDIVIDUALS	187	2	0	189
NUMBER OF FAMILIES	13	1	0	14
BASAL AREA	2.75	0.001	0	2.75 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 7	Fagaceae 59	*Carya ovata* - 39
Juglandaceae 3	Juglandaceae 58	*Quercus stellata* - 25
Ulmaceae 2	Cupressaceae 23	*Juniperus virginiana* - 23
	Aceraceae 18	*Acer saccharum* - 18
	Oleaceae 9	*Carya saccharum* - 18
	Ebenaceae 5	*Quercus alba* - 16
	Ulmaceae 4	*Fraxinus americana* - 9
	Cornaceae 3	*Quercus rubra* - 6
	Rosaceae 3	*Quercus velutina* - 6
	2 families with 2	*Diospyros virginiana* - 5

SITE NO. 15: Indian Cave State Park (indianca)
LOCALITY: U.S.A. Nebraska: Richardson Co., Indiana Cave State Park, near Barada.
COORDINATES: 40°30' N, 95°43' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate dry forest
ELEVATION: 320 m
ANN. RAINFALL: 900 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 7.36



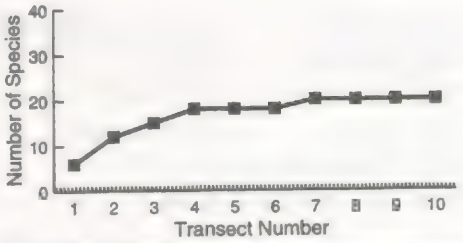
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	22	3	0	25
NUMBER OF INDIVIDUALS	203	9	0	212
NUMBER OF FAMILIES	11	2	0	12
BASAL AREA	3.96	0.044	0	4.00 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 6	Fabaceae 43	*Cercis canadensis* - 42
Juglandaceae 3	Cornaceae 35	*Cornus drummondii* - 35
Ulmaceae 3	Oleaceae 34	*Fraxinus pennsylvanica* - 32
Anacardiaceae 2	Fagaceae 30	*Ostrya virginiana* - 18
Fabaceae 2	Betulaceae 18	*Staphylea trifoliata* - 12
Oleaceae 2	Staphyleaceae 12	*Quercus prinoides* - 9
Vitaceae 2	Juglandaceae 9	*Morus rubra* - 9
	Moraceae 9	*Quercus velutina* - 8
	Tiliaceae 7	*Quercus rubra* - 7
	Vitaceae 7	*Tilia americana* - 7

SITE NO. 16: Cary Arboretum (cary)
LOCALITY: U.S.A. New York: Dutchess Co., Cary Arboretum.
COORDINATES: 46°50' N, 73°45' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Cool temperate moist forest
ELEVATION: 210 m
ANN. RAINFALL: 1,020 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 6.91



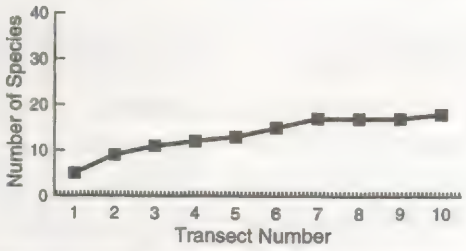
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	20	0	0	20
NUMBER OF INDIVIDUALS	118	0	0	118
NUMBER OF FAMILIES	10	0	0	10
BASAL AREA	3.38	0	0	3.38 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 5	Betulaceae 33	*Ostrya virginiana* - 27
Aceraceae 3	Aceraceae 26	*Quercus rubra* - 12
Betulaceae 3	Fagaceae 22	*Acer rubrum* - 11
Juglandaceae 3	Pinaceae 10	*Pinus strobus* - 10
	Hamamelidaceae 8	*Hamamelis virginiana* - 8
	Oleaceae 8	*Fraxinus americana* - 8
	Rosaceae 5	*Acer pennsylvanicum* - 8
	Juglandaceae 4	*Acer saccharum* - 7
		Amelanchier arborea - 5
		2 species with 4

SITE NO. 17: Montgomery Place (montgome)
LOCALITY: U.S.A. New York: Wayne Co.
COORDINATES: 43°10' N, 77°37' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Cool temperate moist forest
ELEVATION: 210 m
ANN. RAINFALL: 875 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 5.94



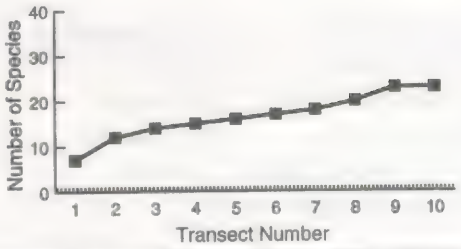
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	18	0	0	18
NUMBER OF INDIVIDUALS	117	0	0	117
NUMBER OF FAMILIES	12	0	0	12
BASAL AREA	6.61	0	0	6.61 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 4	Pinaceae 45	*Tsuga canadensis* - 39
Betulaceae 2	Aceraceae 23	*Acer saccharum* - 23
Oleaceae 2	Fagaceae 22	*Fagus grandifolia* - 12
Pinaceae 2	Oleaceae 11	*Fraxinus americana* - 20
	Betulaceae 4	*Quercus alba* - 7
	Magnoliaceae 4	*Pinus strobus* - 6
	Cornaceae 2	*Liriodendron tulipifera* - 4
	Juglandaceae 2	*Carpinus caroliniana* - 3
		3 species with 2

SITE NO. 18: Bankamp State Park (bankamp)
LOCALITY: U.S.A. Ohio: Bankamp State Park
COORDINATES: 40°03' N, 81°02' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate dry forest
ELEVATION: 250 m *
ANN. RAINFALL: 875 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 7.77



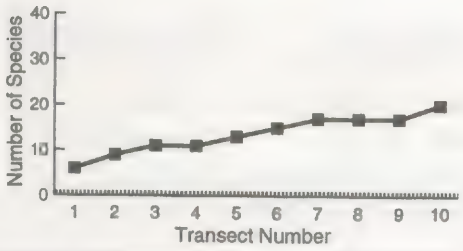
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	21	2	0	23
NUMBER OF INDIVIDUALS	126	16	0	142
NUMBER OF FAMILIES	12	1	0	13
BASAL AREA	4.63	0.038	0	4.67 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Betulaceae 3	Aceraceae 62	*Acer saccharum* - 53
Fagaceae 3	Vitaceae 16	*Vitis* sp.1 - 14
Rosaceae 3	Betulaceae 15	*Cornus florida* - 12
Aceraceae 2	Rosaceae 13	*Prunus serotina* - 10
Juglandaceae 2	Cornaceae 12	*Acer rubrum* - 9
Ulmaceae 2	Fagaceae 7	*Ulmus americana* - 4
Vitaceae 2	Ulmaceae 5	*Ostrya virginiana* - 4
	Juglandaceae 4	4 species with 3
	Nyssaceae 3	
	Salicaceae 2	

SITE NO. 19: Heuston Woods, Beech/Maple (heustobm)
LOCALITY: U.S.A. Ohio: Heuston Woods, beech/maple forest.
COORDINATES: 39°33' N, 84°43' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate moist forest
ELEVATION: 200 m *
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 6.88



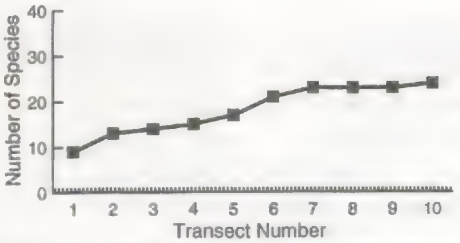
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	20	0	0	20
NUMBER OF INDIVIDUALS	119	0	0	119
NUMBER OF FAMILIES	13	0	0	13
BASAL AREA	4.82	0	0	4.82 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Juglandaceae 3	Aceraceae 38	*Acer saccharum* - 33
Ulmaceae 3	Ulmaceae 26	*Fagus grandifolia* - 14
Aceraceae 2	Fagaceae 15	*Ulmus americana* - 11
Cornaceae 2	Cornaceae 10	*Cornus florida* - 9
Fagaceae 2	Rosaceae 8	*Prunus serotina* - 8
	Magnoliaceae 5	*Acer negundo* - 5
	Tiliaceae 5	*Liriodendron tulipifera* - 5
	Juglandaceae 4	*Tilia americana* - 5
	Oleaceae 4	*Fraxinus americana* - 4

SITE NO. 20: Heuston Woods, Mixed Forest (heustomf)
LOCALITY: U.S.A. Ohio: Heuston Woods, mixed forest.
COORDINATES: 39°33' N, 84°43' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate moist forest
ELEVATION: 200 m *
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 7.58



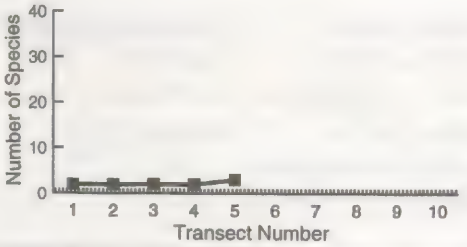
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	22	2	0	24
NUMBER OF INDIVIDUALS	153	19	0	172
NUMBER OF FAMILIES	13	1	0	14
BASAL AREA	6.01	0.037	0	6.05 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 4	Aceraceae 77	*Acer saccharum* - 77
Juglandaceae 3	Vitaceae 19	*Vitis* sp.1 - 15
Oleaceae 3	Oleaceae 14	*Fraxinus americana* - 12
Fabaceae 2	Fagaceae 12	*Cornus florida* - 11
Ulmaceae 2	Cornaceae 11	*Fagus grandifolia* - 8
Vitaceae 2	Juglandaceae 9	*Prunus serotina* - 7
	Ulmaceae 9	*Ulmus rubra* - 6
	Rosaceae 7	4 species with 4
	Fabaceae 4	
	Hippocastanaceae 4	

SITE NO. 21: Timberline (timberli)
LOCALITY: U.S.A. Oregon: Wasco Co.
COORDINATES: 45°17' N, 121°45' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Cool temperate nival wet tundra
ELEVATION: 2,000 m
ANN. RAINFALL: 2,200 mm *
SOIL DATA: Not available
AREA SAMPLED: 500 m^2
FISHER'S ALPHA: 0.38



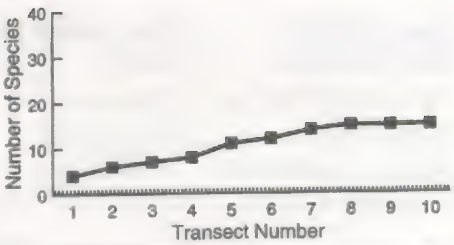
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	2	0	0	2
NUMBER OF INDIVIDUALS	74	0	0	74
NUMBER OF FAMILIES	1	0	0	1
BASAL AREA	7.49	0	0	7.49 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Pinaceae 3	Pinaceae 74	*Tsuga mertensiana* - 63
		Abies lasiocarpa - 11

SITE NO. 22: Jones Mill (jonesmil)
LOCALITY: U.S.A. Pennsylvania.
COORDINATES: 40°05' N, 79°21' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate montane wet forest
ELEVATION: 500 m
ANN. RAINFALL: 1,100 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 4.27



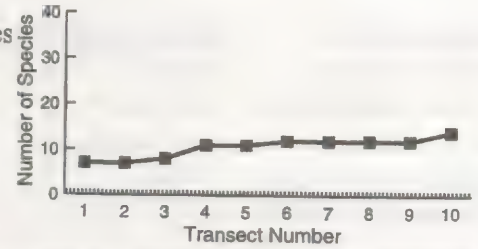
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	15	0	0	15
NUMBER OF INDIVIDUALS	139	0	0	139
NUMBER OF FAMILIES	9	0	0	9
BASAL AREA	4.48	0	0	4.48 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 5	Aceraceae 46	*Acer rubrum* - 45
Aceraceae 2	Fagaceae 29	*Nyssa sylvatica* - 29
Magnoliaceae 2	Nyssaceae 29	*Quercus coccinea* - 17
	Betulaceae 11	*Betula alleghaniensis* - 11
	Magnoliaceae 9	*Liriodendron tulipifera* - 7
	Ericaceae 6	*Kalmia latifolia* - 6
	Hamamelidaceae 4	*Quercus prinoides* - 6
	Lauraceae 4	*Hamamelis virginiana* - 4
		Sassafras albidum - 4
		Quercus primus - 3

SITE NO. 23: Laurel Ridge (laurelri)
LOCALITY: U.S.A. Pennsylvania: Somerset Co., Laurel Ridge.
COORDINATES: 39°57' N, 79°22' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate montane wet fores
ELEVATION: 670 m
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 3.82



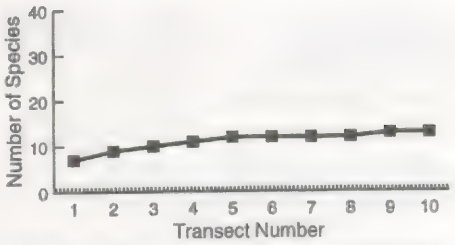
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	14	0	0	14
NUMBER OF INDIVIDUALS	145	0	0	145
NUMBER OF FAMILIES	8	0	0	8
BASAL AREA	5.98	0	0	5.98 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 4	Aceraceae 71	*Fagus grandifolia* - 40
Aceraceae 3	Fagaceae 46	*Acer saccharum* - 38
Rosaceae 2	Rosaceae 18	*Acer pennsylvanicum* - 24
	Betulaceae 4	*Prunus serotina* - 16
	Hamamelidaceae 2	*Acer rubrum* - 9
	Magnoliaceae 2	*Betula alleghaniensis* - 4
		Quercus rubra - 3
		4 species with 2

SITE NO. 24: Kane, Allegheny National Forest (kanealle)
LOCALITY: U.S.A. Pennsylvania: Allegheny National Forest
COORDINATES: 41°40' N, 78°48' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate montane wet forest
ELEVATION: 500 m
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 3.07



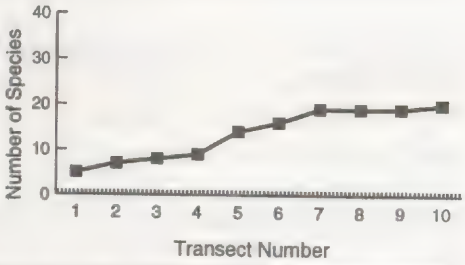
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	13	0	0	13
NUMBER OF INDIVIDUALS	209	0	0	209
NUMBER OF FAMILIES	6	0	0	6
BASAL AREA	4.77	0	0	4.77 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Betulaceae 4	Rosaceae 71	*Tsuga canadensis* - 43
Pinaceae 3	Betulaceae 57	*Prunus serotina* - 39
Aceraceae 2	Pinaceae 49	*Carpinus caroliniana* - 37
Rosaceae 2	Aceraceae 16	*Amelanchier arborea* - 32
	Fagaceae 13	*Ostrya virginiana* - 18
	Hamamelidaceae 3	*Acer saccharum* - 13
		Fagus grandifolia - 13
		Pinus resinosa - 5
		Acer rubrum - 3
		Hamamelis virginiana - 3

SITE NO. 25: Tidroute, Allegheny National Forest (tidroute)
LOCALITY: U.S.A. Pennsylvania: Allegheny National Forest
COORDINATES: 41°42' N, 79°24' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate montane wet forest
ELEVATION: 310 m
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 7.78



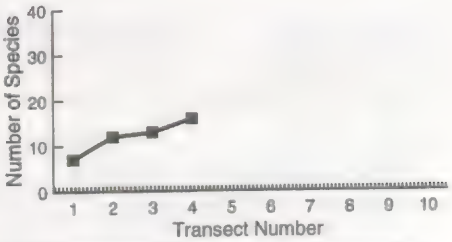
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	19	1	0	20
NUMBER OF INDIVIDUALS	92	2	0	94
NUMBER OF FAMILIES	10	1	0	11
BASAL AREA	7.31	0.046	0	7.35 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 4	Pinaceae 42	*Tsuga canadensis* - 41
Aceraceae 2	Aceraceae 16	*Acer rubrum* - 15
Betulaceae 2	Fagaceae 9	*Fraxinus americana* - 5
Juglandaceae 2	Betulaceae 7	*Ostrya virginiana* - 4
Magnoliaceae 2	Magnoliaceae 6	*Magnolia acuminata* - 4
Oleaceae 2	Oleaceae 6	*Quercus alba* - 3
Pinaceae 2	Juglandaceae 2	*Betula lenta* - 3
	Tiliaceae 2	*Fagus grandifolia* - 3
	Vitaceae 2	4 species with 2

SITE NO. 26: Wild Basin Preserve (wildbasi)
LOCALITY: U.S.A. Texas: Austin Co., Wild Basin Preserve.
COORDINATES: 30°20' N, 97°55' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate montane moist forest
ELEVATION: 1,600 m *
ANN. RAINFALL: 750 mm *
SOIL DATA: Not available
AREA SAMPLED: 400 m^2
FISHER'S ALPHA: 4.05



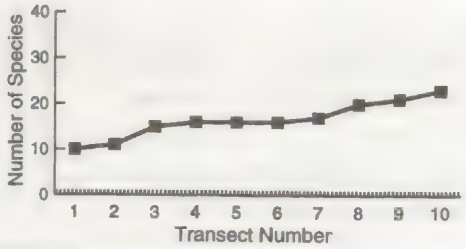
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	15	1	0	16
NUMBER OF INDIVIDUALS	203	3	0	206
NUMBER OF FAMILIES	12	1	0	13
BASAL AREA	1.09	0.025	0	1.10 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 3	Fagaceae 104	*Quercus fusiformis* - 78
Ulmaceae 2	Cupressaceae 43	*Juniperus ashei* - 43
	Aquifoliaceae 29	*Ilex vomitoria* - 29
	Ulmaceae 7	*Quercus texana* - 25
	Garryaceae 6	*Garrya ovata* var. *lindheimeri* - 6
	Fabaceae 4	*Sophora secundiflora* - 4
	Sapotaceae 3	*Ulmus crassifolia* - 4
	Vitaceae 3	*Bumelia lanuginosa* - 3
	Juglandaceae 2	*Celtis reticulata* - 3
	Rhamnaceae 2	*Vitis mustangensis* - 3

SITE NO. 27: Burling Tract (burling)
LOCALITY: U.S.A. Virginia
COORDINATES: 38°57' N, 77°10' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate moist forest
ELEVATION: 60 m
ANN. RAINFALL: 1,053 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 7.30



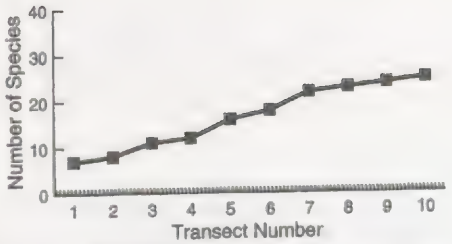
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	22	1	0	23
NUMBER OF INDIVIDUALS	162	1	0	163
NUMBER OF FAMILIES	11	1	0	12
BASAL AREA	4.59	0.0005	0	4.59 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 7	Aceraceae 44	*Acer rubrum* - 44
Juglandaceae 5	Cornaceae 28	*Cornus florida* - 28
Ericaceae 2	Fagaceae 26	*Nyssa sylvatica* - 15
	Juglandaceae 24	*Carya glabra* - 12
	Nyssaceae 15	*Carpinus caroliniana* - 8
	Betulaceae 8	*Liriodendron tulipifera* - 8
	Magnoliaceae 8	*Quercus prinoides* - 6
	Ericaceae 4	*Quercus alba* - 6
	Lauraceae 2	*Carya ovata* - 6
	Oleaceae 2	*Fagus grandifolia* - 5

SITE NO. 28: Potomac (potomac)
LOCALITY: U.S.A. Virginia
COORDINATES: 38°05' N, 76°34' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

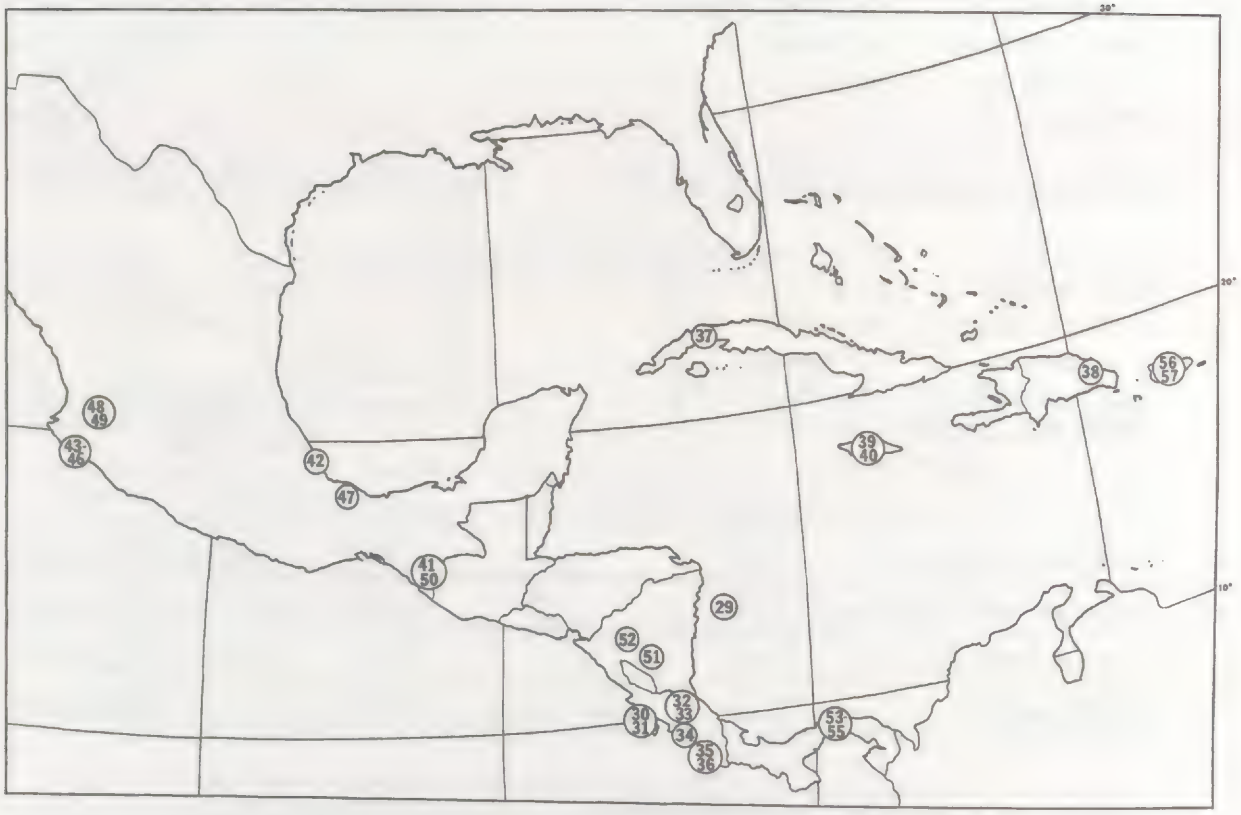
LIFE ZONE: Warm temperate dry forest
ELEVATION: 33 m *
ANN. RAINFALL: 875 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 8.59



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	23	2	0	25
NUMBER OF INDIVIDUALS	147	2	0	149
NUMBER OF FAMILIES	14	2	0	16
BASAL AREA	5.55	0.035	0	5.59 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Aceraceae 3	Annonaceae 51	*Asimina triloba* - 51
Betulaceae 2	Aceraceae 26	*Acer saccharum* - 18
Cornaceae 2	Tiliaceae 14	*Tilia americana* - 14
Fagaceae 2	Betulaceae 13	*Ostrya virginiana* - 10
Juglandaceae 2	Fagaceae 8	*Fagus grandifolia* - 7
Magnoliaceae 2	Juglandaceae 8	*Carya cordiformis* - 6
Oleaceae 2	Cornaceae 6	*Acer negundo* - 6
Ulmaceae 2	Lauraceae 4	*Cornus florida* - 5
	Magnoliaceae 4	*Lindera benzoin* - 4
	Oleaceae 4	4 species with 3

Section 2. Location of transects from Mexico, Central America, and the West Indies, sites 29–57.

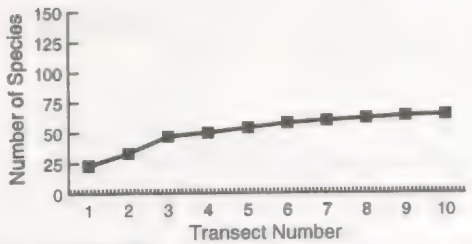


29 – Isla Providencia, Colombia
30 – Guanacaste Upland, Costa Rica
31 – Guanacaste Gallery Forest, Costa Rica
32 – La Selva, Costa Rica
33 – Magsasay, Costa Rica
34 – Carara National Park, Costa Rica
35 – Rancho Quemado, Costa Rica
36 – Osa-Sirena, Costa Rica
37 – Sierra Rosario, Cuba
38 – Los Haitaíses National Park, Dominican Republic
39 – Round Hill, slope, Jamaica
40 – Round Hill, top, Jamaica
41 – Benito Juarez, Mexico
42 – Bosque de Guadeloupe, Mexico
43 – Chamela Upland 1, Mexico
44 – Chamela Upland 2, Mexico
45 – Chamela Arroyos, Mexico
46 – Chamela 4, Mexico
47 – Los Tuxtlas, Mexico
48 – Las Joyas, Mexico
49 – Quince Ocotes, Mexico
50 – Motozintla, Mexico
51 – Cerro Oluma, Nicaragua
52 – Cerro El Picacho, Nicaragua
53 – Curundu, Panama
54 – Madden Forest, Panama
55 – Pipeline Road, Panama
56 – Luquillo, Puerto Rico
57 – Mogotes de Nevárez, Puerto Rico

SITE NO. 29: Isla Providencia (providen)
LOCALITY: Colombia. Providencia Island: Forest on trail from Santa Isabel Town to summit.
COORDINATES: 13°21' N, 81°22' W
COLLECTORS: A. Gentry, R. Ortiz, H. Cuadros
VOUCHERS: 79644 - 79741
DATES: 5 - 6 June 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical wet forest
ELEVATION: 230 m
ANN. RAINFALL: 2,500 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 20.87



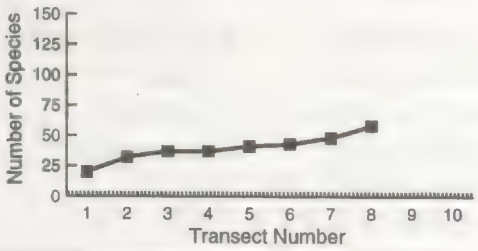
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	55	9	1	65
NUMBER OF INDIVIDUALS	390	56	3	449
NUMBER OF FAMILIES	22	6	1	25
BASAL AREA	3.06	0.10	0.09	3.25 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Myrtaceae 9	Myrtaceae 71	Myrtaceae gen. 2 sp.1 - 45
Rubiaceae 7	Polygonaceae 51	*Coccoloba* sp.3 - 39
Polygonaceae 5	Euphorbiaceae 50	*Croton schiedeanus* - 24
Dilleniaceae 4	Fabaceae 43	*Guettarda* sp.1 - 21
Euphorbiaceae 4	Flacourtiaceae 42	*Casearia* sp.1 - 21
Fabaceae 4	Dilleniaceae 39	*Euphorbia petiolaris* - 20
Flacourtiaceae 4	Rubiaceae 39	*Tetracera volubilis* - 19
Lauraceae 3	Malpighiaceae 19	*Acacia cornigera* - 19
Sapotaceae 3	Ochnaceae 18	*Byrsonima crassifolia* - 18
6 families with 2	Lauraceae 13	*Ouratea* sp.1 - 18

SITE NO. 30: Guanacaste Upland (guanup)
LOCALITY: Costa Rica. Guanacaste: Paloverde, OTS Field Station, 8 km W of Bagaces.
COORDINATES: 10°32' N, 85°18' W
COLLECTORS: A. Gentry
VOUCHERS: None for lines 1 - 7, 71443 - 71459 line 8
DATES: 10 - 17 June 1971, 14 June 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 100 m
ANN. RAINFALL: 1,600 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 800 m^2
FISHER'S ALPHA: 20.46



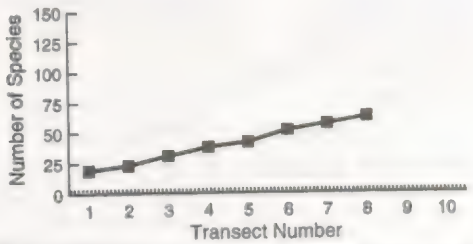
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	50	8	0	58
NUMBER OF INDIVIDUALS	251	77	0	328
NUMBER OF FAMILIES	25	4	0	26
BASAL AREA	1.59	0.056	0	1.65 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 13	Bignoniaceae 119	*Lonchocarpus minimiflorus* - 41
Bignoniaceae 8	Fabaceae 62	*Cochlospermum vitifolium* - 28
Rubiaceae 4	Cochlospermaceae 28	*Tabebuia ochracea* - 24
Anacardiaceae 3	Anacardiaceae 14	*Arrabidaea patellifera* - 23
Flacourtiaceae 3	Rubiaceae 14	*Godmania aesculifolia* - 15
6 families with 2	Boraginaceae 12	*Cydista diversifolia* - 13
	Sapindaceae 9	*Spondias purpurea* - 12
	Celastraceae 8	*Xylophragma seemannianum* - 10
	3 families with 7	*Cordia alliodora* - 10
		Tabebuia impetiginosa - 10

SITE NO. 31: Guanacaste gallery forest (guangf)
LOCALITY: Costa Rica. Guanacaste: La Pacífica, near Playas del Mango, gallery forest.
COORDINATES: 10°30' N, 85°10' W
COLLECTORS: A. Gentry
VOUCHERS: None
DATES: 4 - 7 July 1971

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 100 m
ANN. RAINFALL: 1,600 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 800 m^2
FISHER'S ALPHA: 40.88



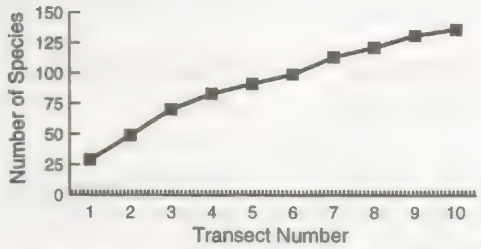
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	55	8	0	63
NUMBER OF INDIVIDUALS	131	19	0	150
NUMBER OF FAMILIES	32	5	0	33
BASAL AREA	3.31	0.016	0	3.33 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 9	Bignoniaceae 20	*Thouinidium decandrum* - 10
Bignoniaceae 8	Fabaceae 20	*Piper arboreum* - 10
Anacardiaceae 3	Sapindaceae 13	*Cydista diversifolia* - 9
Flacourtiaceae 3	Annonaceae 12	*Ardisia revoluta* - 7
Myrtaceae 3	Piperaceae 10	*Annona holosericea* - 6
Sapindaceae 3	Myrsinaceae 7	*Sapranthus palanga* - 6
7 families with 2	Myrtaceae 6	*Licania arborea* - 5
	4 families with 5	*Bauhinia ungulata* - 5
		3 species with 4

SITE NO. 32: La Selva (laselva)
LOCALITY: Costa Rica. Heredia: La Selva, Río Sarapiquí near Puerto Viejo.
COORDINATES: 10°26' N, 84°01' W
COLLECTORS: A. Gentry, R. Ortiz, J. Bradford, I. Shonle
VOUCHERS: 78484 - 78641
DATES: 5 - 8 January 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical wet forest
ELEVATION: 100 m
ANN. RAINFALL: 4,000 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 90.72



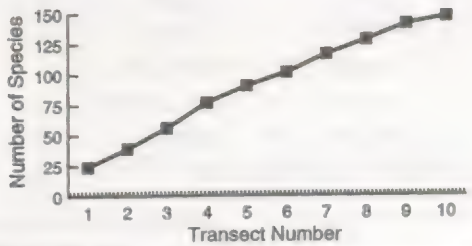
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	102	30	5	137
NUMBER OF INDIVIDUALS	253	56	11	320
NUMBER OF FAMILIES	34	16	4	48
BASAL AREA	3.09	0.046	0.003	3.139 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 10	Annonaceae 52	*Anaxagorea phaeocarpa* - 42
Arecaceae 9	Arecaceae 46	*Iriartea deltoidea* - 17
Fabaceae 9	Fabaceae 20	*Pentaclethra macroloba* - 9
Moraceae 9	Moraceae 19	*Geonoma congesta* - 8
Bignoniaceae 8	Burseraceae 17	*Moutabea aculeata* - 8
Burseraceae 6	Rubiaceae 17	*Rinorea deflexiflora* - 6
Meliaceae 6	Dilleniaceae 9	*Socratea exorrhiza* - 6
Sapindaceae 6	5 families with 8	*Capparis pittieri* - 6
Annonaceae 6		*Protium costaricensis* - 6
Lauraceae 6		3 species with 5

SITE NO. 33: Magsasay (magsasay)
LOCALITY: Costa Rica. Heredia: Braulio Carrillo National Park, Magsasay, near La Selva.
COORDINATES: 10°24' N, 84°03' W
COLLECTORS: A. Gentry, B. Hammel, L. Woodruff, H. Kennedy
VOUCHERS: 71693A - 71778A
DATES: 17 - 18 July 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical wet forest
ELEVATION: 150 m
ANN. RAINFALL: 3,884 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 93.70



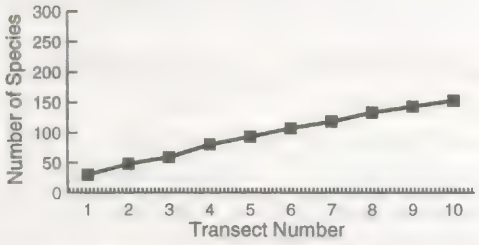
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	112	30	6	148
NUMBER OF INDIVIDUALS	301	50	10	361
NUMBER OF FAMILIES	38	15	4	52
BASAL AREA	3.89	0.27	0.0051	4.17 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Arecaceae 15	Arecaceae 40	*Anaxagorea crassipetala* - 25
Bignoniaceae 9	Annonaceae 37	*Protium pittieri* - 21
Fabaceae 8	Fabaceae 29	*Pentaclethra macroloba* - 17
Melastomataceae 7	Burseraceae 28	*Ryania speciosa* - 14
Annonaceae 7	Chrysobalanaceae 20	*Pinzona coriacea* - 12
Moraceae 7	Flacourtiaceae 19	*Licania affinis* - 7
Sapotaceae 6	Moraceae 19	*Euterpe macrospadix* - 7
Chrysobalanaceae 6	Rubiaceae 19	4 species with 6
Rubiaceae 6	Dilleniaceae 14	
Burseraceae 5	Bignoniaceae 13	

SITE NO. 34: Carara National Park (carara)
LOCALITY: Costa Rica. San Jose: Near Carara National Park guard post, Río Carara.
COORDINATES: 09°46' N, 84°32' W
COLLECTORS: A. Gentry, N. Zamora, Q. Jiménez, & INBIO parataxonomist course
VOUCHERS: 79406 - 79566
DATES: 5 - 6 April 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 130 m
ANN. RAINFALL: 3,500 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 106.75



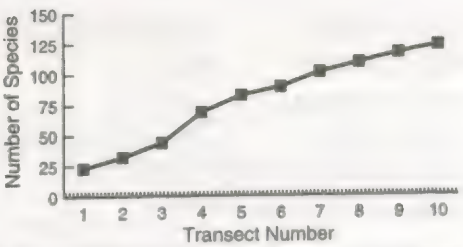
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	125	24	5	154
NUMBER OF INDIVIDUALS	290	48	7	345
NUMBER OF FAMILIES	41	13	5	53
BASAL AREA	7.12	0.14	0.017	7.28 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 19	Fabaceae 35	*Rinorea* sp.1 - 34
Moraceae 13	Violaceae 35	*Unonopsis theobromifolia* - 12
Sapotaceae 9	Moraceae 30	*Protium panamense* - 12
Meliaceae 8	Burseraceae 22	*Sorocea pubivenis* - 10
Sapindaceae 7	Arecaceae 20	*Bactris* sp.1 - 9
Lauraceae 7	Meliaceae 18	*Cryosophila guagara* - 9
Clusiaceae 6	Sapotaceae 14	*Croton schiedeanus* - 8
Burseraceae 5	Bignoniaceae 14	*Piper reticulatum* - 6
Bignoniaceae 5	Clusiaceae 13	*Tovomita longifolia* - 5
2 families with 4	3 families with 12	9 species with 4

SITE NO. 35: Rancho Quemado (ranchoqu)
LOCALITY: Costa Rica. Puntarenas: Ridge before Rancho Quemado, near Rincón, Osa Península.
COORDINATES: 08°42' N, 83°33' W
COLLECTORS: A. Gentry, R. Ortiz, I. Shonle, J. Bradford, P. Anderson
VOUCHERS: 78643 - 78783
DATES: 11 - 13 January 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 300 m
ANN. RAINFALL: 3,125 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 89.98



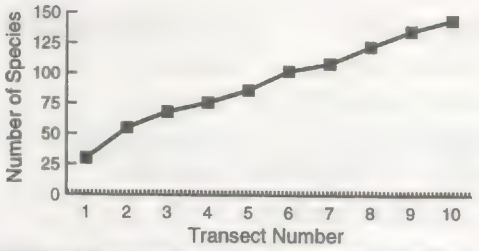
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	107	13	4	124
NUMBER OF INDIVIDUALS	234	28	5	267
NUMBER OF FAMILIES	39	9	2	47
BASAL AREA	6.16	0.078	0.025	6.27 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 9	Rubiaceae 31	*Pausandra trianae* - 17
Sapotaceae 8	Euphorbiaceae 20	*Rinorea paniculata* - 11
Moraceae 8	Moraceae 19	*Pouteria* sp.1 - 8
Fabaceae 7	Sapotaceae 16	*Compsoneura excelsa* - 7
Arecaceae 6	Arecaceae 15	*Iriartea deltoidea* - 7
Burseraceae 5	Violaceae 15	*Doliocarpus dentatus* - 6
Annonaceae 4	Apocynaceae 11	5 species with 5
Clusiaceae 4	Myristicaceae 11	
Euphorbiaceae 4	Clusiaceae 9	
Myristicaceae 4	Loganiaceae 9	

SITE NO. 36: Osa-Sirena (osasiren)
LOCALITY: Costa Rica. Puntarenas: Vicinity of Sirena Field Station, Corcovado National Park, Osa Península.
COORDINATES: 08°30' N, 83°55' W
COLLECTORS: A. Gentry, Organization for Tropical Studies, Class 84-3
VOUCHERS: 48492 - 48676
DATES: 13 - 17 August 1984

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 30 m
ANN. RAINFALL: 3,800 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 109.68



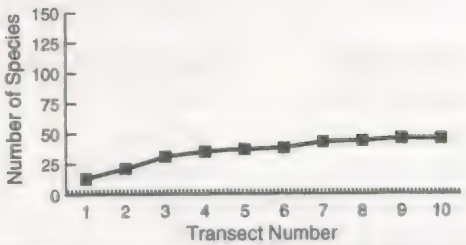
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	108	29	7	144
NUMBER OF INDIVIDUALS	238	52	8	298
NUMBER OF FAMILIES	32	13	6	43
BASAL AREA	8.27	0.10	0.08	8.45 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Moraceae 16	Arecaceae 34	*Tetrathylacium macrophyllum* - 29
Fabaceae 14	Flacourtiaceae 33	*Crysophila* sp.1 - 11
Sapindaceae 9	Moraceae 32	*Asterogyne martiana* - 8
Euphorbiaceae 7	Fabaceae 26	*Perebea angustifolia* - 7
Arecaceae 6	Sapindaceae 18	*Bactris* cf. *alleniana* - 7
Annonaceae 6	Annonaceae 13	*Cissus rhombifolia* - 7
Myristicaceae 6	Euphorbiaceae 11	*Paullinia bracteosa* - 6
Meliaceae 5	Vitaceae 10	*Bactris alleniana* - 6
Sapotaceae 5	Clusiaceae 10	3 species with 5
3 families with 4	Myristicaceae 10	

SITE NO. 37: Sierra Rosario (sierraro)
LOCALITY: Cuba. Pinar del Río: Sierra Rosario, Reserva de Biósfera.
COORDINATES: 22°50' S, 83°00' W
COLLECTORS: A. Gentry, H. Cuadros, O. Valdés
VOUCHERS: 71328 - 71378
DATES: 29 June 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical wet forest
ELEVATION: 370 - 390 m
ANN. RAINFALL: 2,200 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 15.58



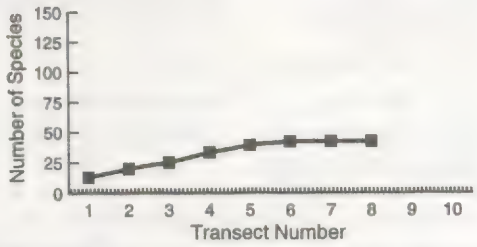
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	35	10	1	46
NUMBER OF INDIVIDUALS	248	34	1	283
NUMBER OF FAMILIES	19	8	1	28
BASAL AREA	4.04	0.057	0.0005	4.10 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 7	Moraceae 127	*Pseudolmedia spuria* - 72
Euphorbiaceae 3	Rubiaceae 17	*Trophis racemosa* - 49
Lauraceae 3	Sapindaceae 17	*Syzygium jambos* - 16
Moraceae 3	Myrtaceae 16	*Matayba apetala* - 15
Sapindaceae 3	Meliaceae 15	*Guarea guidonia* - 14
Vitaceae 3	Araliaceae 11	*Dendropanax arboreus* - 11
Meliaceae 2	Euphorbiaceae 10	*Pisonia aculeata* - 10
Rutaceae 2	Lauraceae 10	*Faramea occidentalis* - 9
	Nyctaginaceae 10	*Alchornea latifolia* - 8
	Vitaceae 10	*Hibiscus elatus* - 7

SITE NO. 38: Los Haitaíses National Park (loshaiti)
LOCALITY: Dominican Republic. Hato Mayor: Los Haitaíses National Park, W of Sabana de la Mar.
COORDINATES: 19°05' N, 69°30' W
COLLECTORS: A. Gentry, R. Ortiz, S. Keel
VOUCHERS: 79568 - 79609
DATES: 1 - 2 May 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical dry forest
ELEVATION: 10 - 20 m
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 800 m²
FISHER'S ALPHA: 17.46



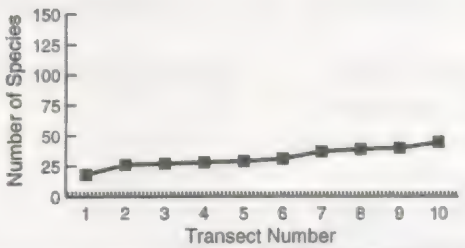
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	28	14	0	42
NUMBER OF INDIVIDUALS	135	41	0	176
NUMBER OF FAMILIES	22	11	0	29
BASAL AREA	3.34	0.11	0	3.45 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 4	Annonaceae 41	*Oxandra* sp.1 - 41
Lauraceae 3	Araliaceae 26	*Dendropanax* sp.1 - 22
Meliaceae 3	Combretaceae 17	*Combretum* sp.1 - 17
Amaranthaceae 2	Meliaceae 14	*Eugenia* sp.1 - 10
Araliaceae 2	Myrtaceae 11	*Guarea guidonia* - 10
Bignoniaceae 2	Anacardiaceae 9	*Spondias* sp.1 - 9
Moraceae 2	Fabaceae 8	*Cissus* sp.1 - 8
Myrtaceae 2	Urticaceae 8	*Urera baccifera* - 7
Urticaceae 2	Vitaceae 8	*Dendropanax arborea* - 4
	2 families with 4	*Inga* sp.1 - 4

SITE NO. 39: Round Hill, Slope (roundslo)
LOCALITY: Jamaica. Clavendon Parish: Near Rest, Milk River, slope forest.
COORDINATES: 17°20' N, 77°25' W
COLLECTORS: V. Kapos
VOUCHERS: None
DATES: August - September 1978

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical moist forest
ELEVATION: 150 m
ANN. RAINFALL: 1,200 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 11.26



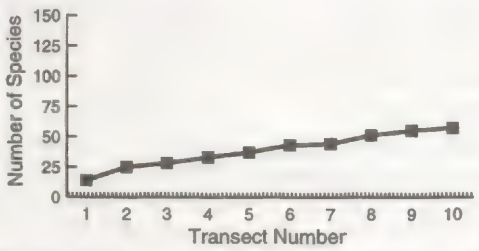
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	45	not sampled	not sampled	45
NUMBER OF INDIVIDUALS	601	not sampled	not sampled	601
NUMBER OF FAMILIES	26	not sampled	not sampled	26
BASAL AREA	2.64	not sampled	not sampled	2.64 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Myrtaceae 6	Anacardiaceae 128	*Metopium brownii* - 128
Erythroxylaceae 4	Ebenaceae 76	*Diospyros tetrasperma* - 76
Euphorbiaceae 3	Myrtaceae 76	*Guettarda argentea* - 34
Fabaceae 3	Euphorbiaceae 47	*Calyptranthes zuzygium* - 34
Polygonaceae 3	Rutaceae 40	*Coccoloba krugii* - 30
Rutaceae 3	Polygonaceae 37	*Ateramnus lucidus* - 30
Flacourtiaceae 2	Rubiaceae 34	*Eugenia foetida* - 20
Nyctaginaceae 2	Erythroxylaceae 23	*Zanthoxylum spinosa* - 20
Sapindaceae 2	Sapotaceae 19	*Bumelia salicifolia* - 19
	3 families with 15	*Amyris elemifera* - 18

SITE NO. 40: Round Hill, Top (roundtop)
LOCALITY: Jamaica. Clavendon Parish: Near Rest, Milk River, ridge top forest.
COORDINATES: 17°20' N, 77°25' W
COLLECTORS: V. Kapos
VOUCHERS: None
DATES: August - September 1978

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical moist forest
ELEVATION: 300 m
ANN. RAINFALL: 1,200 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 15.95



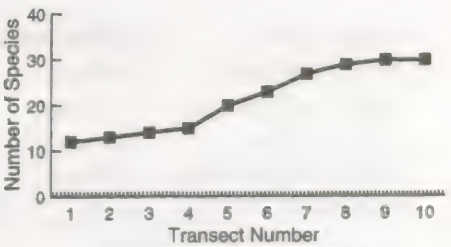
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	53	3	1	57
NUMBER OF INDIVIDUALS	544	8	1	553
NUMBER OF FAMILIES	29	3	1	31
BASAL AREA	3.67	0.039	0.0025	3.71 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Myrtaceae 5	Euphorbiaceae 184	*Ateramnus lucidus* - 111
Euphorbiaceae 4	Moraceae 111	*Brosimum alicastrum* - 109
Polygonaceae 4	Arecaceae 78	*Thrinax parviflora* - 78
Celastraceae 3	Myrtaceae 25	*Drypetes lateriflora* - 70
Flacourtiaceae 3	Ebenaceae 16	*Nectandra coriacea* - 16
Moraceae 3	Lauraceae 16	*Diospyros tetrasperma* - 16
Rutaceae 3	Polygonaceae 16	*Calyptranthes pallens* - 12
Sapindaceae 3	Anacardiaceae 12	*Tabebuia riparia* - 11
6 families with 2	Bignoniaceae 11	*Metopium brownii* - 11
	5 families with 8	*Krugiodendron ferreum* - 7

SITE NO. 41: Benito Juarez (benito)
LOCALITY: Mexico. Chiapas: Along dirt road to Siltepec, past Ejido Benito Juárez, ca. 12 km from the turnoff from Mexican Hwy. 190, S of Motozintla.
COORDINATES: 15°20' N, 92°15' W
COLLECTORS: J. Miller
VOUCHERS: 2751 - 2781
DATES: 9 May 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane moist forest
ELEVATION: 2,100 m
ANN. RAINFALL: 1,500 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 8.51



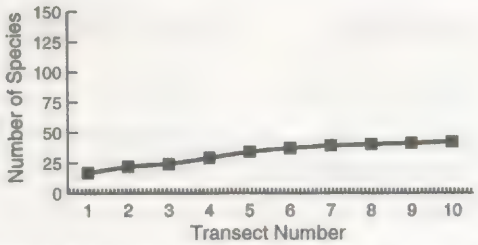
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	28	0	0	28
NUMBER OF INDIVIDUALS	220	0	0	220
NUMBER OF FAMILIES	23	0	0	23
BASAL AREA	4.42	0	0	4.42 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 3	Myricaceae 49	*Myrica cerifera* - 49
Asteraceae 2	Rubiaceae 31	*Rondeletia* sp. 1 - 30
Mysinaceae 2	Styracaceae 26	*Styrax argenteus* - 26
Rubiaceae 2	Betulaceae 19	*Carpinus carolinianus* - 19
	Fagaceae 16	*Symplocos hartwegii* - 14
	Symplocaceae 14	Asteraceae gen. 1 sp. 1 - 9
	Melastomataceae 9	*Viburnum* sp. 1 - 9
	Rhizophoraceae 7	*Miconia* sp. 1 - 9
	Pinaceae 5	*Quercus* sp. 1 - 9
	2 families with 4	*Cassipourea elliptica* - 7

SITE NO. 42: Bosque de Guadeloupe (bosquede)
LOCALITY: Mexico. Veracruz: Bosque de Guadeloupe, adjacent to Francisco Javier Clavijero Botanical Garden, at 2.5 km S of Jalapa on road to Coatepec.
COORDINATES: 19°30' N, 96°57' W
COLLECTORS: A. Gentry, G. Williams
VOUCHERS: 75656 - 75702
DATES: 5 - 6 December 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane moist
ELEVATION: 1,200 m
ANN. RAINFALL: 1,514 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 13.23



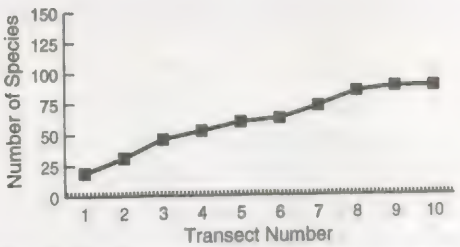
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	35	7	0	42
NUMBER OF INDIVIDUALS	248	55	0	303
NUMBER OF FAMILIES	21	6	0	26
BASAL AREA	7.21	0.091	0	7.30 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 4	Myrtaceae 46	*Carpinus caroliniana* - 40
Araliaceae 3	Betulaceae 44	*Eugenia xalapensis* - 36
Piperaceae 3	Lauraceae 33	*Turpinia insignis* - 31
Rubiaceae 3	Staphyleaceae 31	*Cinnamomum effusum* - 27
7 families with 2	Fagaceae 23	*Celastrus* sp.1 - 21
	Celastraceae 22	*Pithecoctenium crucigerum* - 13
	Vitaceae 14	*Quercus germana* - 12
	Bignoniaceae 13	*Eugenia* sp.1 - 10
	Rubiaceae 12	*Oreopanax xalapensis* - 9
	Araliaceae 11	*Palicourea padifolia* - 9

SITE NO. 43: Chamela Upland 1 (chamela1)
LOCALITY: Mexico. Jalisco: Estación de Biología Chamela, 125 km NW of Manzanillo, less than 2 km from the Pacific Coast.
COORDINATES: 19°30' N, 105°03' W
COLLECTORS: E. Lott, A. Solís-Magallanes, S. Bullock
VOUCHERS: Lott (MEXU)
DATES: 1985

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical dry forest
ELEVATION: 10 - 584 m
ANN. RAINFALL: 748 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 35.71



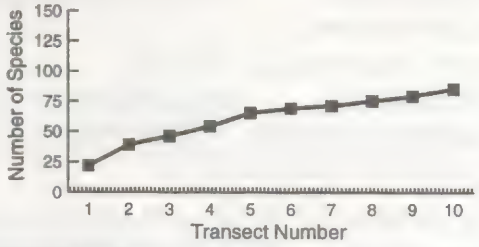
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	78	11	0	89
NUMBER OF INDIVIDUALS	357	39	0	396
NUMBER OF FAMILIES	35	9	0	38
BASAL AREA	2.57	0.059	0	2.63 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 20	Euphorbiaceae 90	*Croton pseudoniveus* - 48
Euphorbiaceae 10	Fabaceae 83	*Croton fragilis* - 19
Rubiaceae 5	Boraginaceae 26	*Lonchocarpus constrictus* - 17
Flacourtiaceae 3	Rubiaceae 20	*Trichilia trifolia* ssp. *palmeri* - 15
Sapindaceae 3	Sapindaceae 16	*Cordia alliodora* - 13
Apocynaceae 3	Meliaceae 15	*Guapira* sp.1 - 13
Boraginaceae 3	Flacourtiaceae 13	*Lonchocarpus parviflorus* - 12
Polygonaceae 3	Nyctaginaceae 13	*Serjania brachycarpa* - 12
9 families with 2	Malpighiaceae 9	3 species with 10
	Apocynaceae 9	

SITE NO. 44: Chamela Upland 2 (chamela2)
LOCALITY: Mexico. Jalisco: Estación de Biología Chamela. 125 km NW of Manzanillo, less than 2 km from Pacific Coast. Area between Camino Antiguo Norte and Vered Tejón.
COORDINATES: 19°30' N, 105°03' W
COLLECTORS: E. Lott, A. Solís-Magallanes, S. Bullock
VOUCHERS: Lott (MEXU)
DATES: 1985

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical dry forest
ELEVATION: 10 - 548 m
ANN. RAINFALL: 748 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 29.21



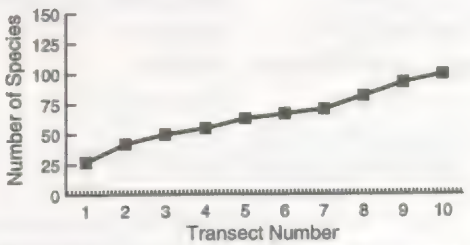
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	78	7	0	85
NUMBER OF INDIVIDUALS	454	53	0	507
NUMBER OF FAMILIES	32	6	0	33
BASAL AREA	2.10	0.078	0	2.18 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 21	Fabaceae 173	*Lonchocarpus parviflorus* - 73
Euphorbiaceae 8	Euphorbiaceae 81	*Croton pseudoniveus* - 36
Rubiaceae 8	Sapindaceae 54	*Thouinia paucidentata* - 32
Burseraceae 3	Boraginaceae 32	*Serjania brachycarpa* - 22
Cactaceae 3	Rubiaceae 30	*Croton fragilis* - 21
Flacourtiaceae 3	Flacourtiaceae 18	*Bourreria* sp.1 - 18
Malpighiaceae 3	Malpighiaceae 16	*Caesalpinia eriostachys* - 18
Rhamnaceae 3	Polygonaceae 12	*Randia thurberi* - 17
8 families with 2	Asteraceae 10	*Caesalpinia pulcherrima* - 16
	Verbenaceae 10	4 species with 14

SITE NO. 45: Chamela Arroyos (chamela3)
LOCALITY: Mexico. Jalisco: Estación de Biología Chamela. 125 km NW of Manzanillo, less than 2 km from Pacific Coast. Arroyo floodplain.
COORDINATES: 19°30' N, 105°03' W
COLLECTORS: E. Lott, A. Solís-Magallanes, S Bullock
VOUCHERS: Lott (MEXU)
DATES: 1985

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical dry forest
ELEVATION: 10 - 584 m
ANN. RAINFALL: 748 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 39.91



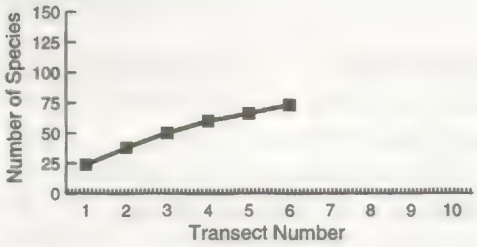
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	78	22	0	100
NUMBER OF INDIVIDUALS	308	141	0	449
NUMBER OF FAMILIES	40	16	0	47
BASAL AREA	5.32	0.35	0	5.67 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 18	Sapindaceae 64	*Thouinidium decandrum* - 43
Bignoniaceae 8	Fabaceae 54	*Trichilia trifolia* ssp. *palmeri* - 21
Euphorbiaceae 6	Bignoniaceae 51	*Forsteronia spicata* - 20
Sapindaceae 5	Capparidaceae 31	*Capparis verrucosa* - 18
Rubiaceae 5	Meliaceae 23	*Podopterus cordifolius* - 17
Capparidaceae 4	Polygonaceae 23	*Paullinia sessiliflora* - 16
Anacardiaceae 3	Anacardiaceae 22	*Astronium graveolens* - 16
Polygonaceae 3	Apocynaceae 22	*Clytostoma binatum* - 16
9 families with 2	Combretaceae 14	*Combretum fruticosum* - 14
	Euphorbiaceae 14	*Adenocalymna inundatum* - 13

SITE NO. 46: Chamela 4 (chamela4)
LOCALITY: Mexico. Jalisco: Chamela, El Tejón.
COORDINATES: 19°30' N, 105°03' W
COLLECTORS: A. Gentry, UNAM Tropical Ecology Class
VOUCHERS: 74405 - 74480
DATES: 17 -19 August 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical dry forest
ELEVATION: 100 m
ANN. RAINFALL: 748 mm
SOIL DATA: Not available
AREA SAMPLED: 600 m^2
FISHER'S ALPHA: 36.47



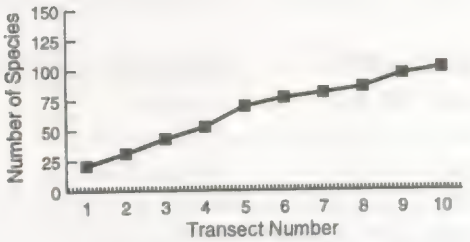
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	61	13	0	74
NUMBER OF INDIVIDUALS	200	41	0	241
NUMBER OF FAMILIES	23	10	0	27
BASAL AREA	1.78	0.03	0	1.81 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 21	Fabaceae 111	*Apoplanesia paniculata* - 56
Euphorbiaceae 8	Sapindaceae 28	*Serjania brachycarpa* - 15
Rubiaceae 6	Euphorbiaceae 17	*Thouinia paucidentata* - 13
Burseraceae 4	Rubiaceae 8	*Caesalpinia eriostachys* - 13
11 families with 2	Achatocarpaceae 6	*Heliocarpus pallidus* - 6
	Boraginaceae 6	*Achatocarpus gracilis* - 6
	Burseraceae 6	*Piptadenia obliqua* - 6
	Nyctaginaceae 6	*Jatropha standleyi* - 5
	Tiliaceae 6	*Cordia alliodora* - 5
	2 families with 5	5 species with 4

SITE NO. 47: Los Tuxtlas (tuxtlas)
LOCALITY: Mexico. Veracruz: Estación de Biología Tropical Los Tuxtlas.
COORDINATES: 18°35' N, 95°08' W
COLLECTORS: A. Gentry, E. Lott, UNAM Tropical Botany Course
VOUCHERS: 32456 - 32563
DATES: 30 May - 1 June 1981

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical rain forest
ELEVATION: 170 - 200 m
ANN. RAINFALL: 4,953 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 51.34



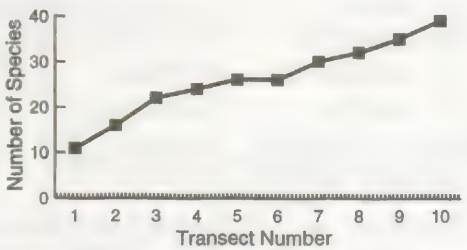
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	73	26	3	102
NUMBER OF INDIVIDUALS	269	51	3	323
NUMBER OF FAMILIES	34	14	1	44
BASAL AREA	3.94	0.10	0.0015	4.05 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 8	Arecaceae 108	*Astrocaryum mexicanum* - 78
Moraceae 6	Moraceae 23	*Chamaedorea topejilote* - 22
Sapindaceae 5	Urticaceae 21	*Myriocarpa longipes* - 18
Arecaceae 4	Fabaceae 13	*Pseudolmedia oxyphyllaria* - 13
Solanaceae 4	Rubiaceae 12	*Orthion oblanceolatum* - 8
Bignoniaceae 4	Violaceae 12	*Salacia megistophylla* - 7
Euphorbiaceae 4	Celastraceae 10	*Heliconia bourgeana* - 7
Piperaceae 4	Euphorbiaceae 10	*Faramea occidentalis* - 7
Rubiaceae 4	Bignoniaceae 9	3 species with 5
8 families with 3	Sapotaceae 8	

SITE NO. 48: Las Joyas (lasjoyas)
LOCALITY: Mexico. Jalisco: Sierra de Manantlan, Biosphere Reserve, Las Joyas section, 36 km S of Ahuacapán.
COORDINATES: 19°35' N, 104°08' W
COLLECTORS: A. Gentry, E. Jardel
VOUCHERS: 73524 - 73550
DATES: 25 March 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical montane wet forest
ELEVATION: 1,950 m
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 14.66



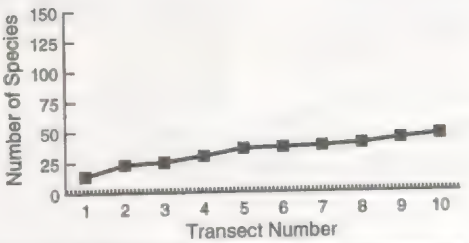
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	30	6	3	39
NUMBER OF INDIVIDUALS	170	17	8	195
NUMBER OF FAMILIES	20	6	2	27
BASAL AREA	10.13	0.06	0.0095	10.19 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Celastraceae 5	Myrsinaceae 58	*Parathesis villosa* - 55
Fagaceae 3	Celastraceae 36	*Zinowiewia concinna* - 24
Araliaceae 2	Euphorbiaceae 20	*Euphorbia schlechtendalii* - 20
Convolvulaceae 2	Araliaceae 11	*Dendropanax arborescens* - 10
Lauraceae 2	Solanaceae 9	*Cestrum* sp.1 - 8
Melastomataceae 2	Lauraceae 8	*Conostegia vulcanicola* - 7
Myrsinaceae 2	Melastomataceae 8	*Cinnamomum pachypodum* - 7
Solanaceae 2	Betulaceae 6	*Carpinus* sp.1 - 6
	Asteraceae 5	4 species with 5
	Vitaceae 5	

SITE NO. 49: Quince Ocotes (quinceoc)
LOCALITY: Mexico. Jalisco: Sierra de Manantlan, Biosphere Reserve, Quince Ocotes.
COORDINATES: 19°44' N, 104°15' W
COLLECTORS: A. Gentry, E. Jardel
VOUCHERS: 73556 - 73590
DATES: 27 March 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical montane moist forest
ELEVATION: 1,800 m
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1, 000 m^2
FISHER'S ALPHA: 18.27



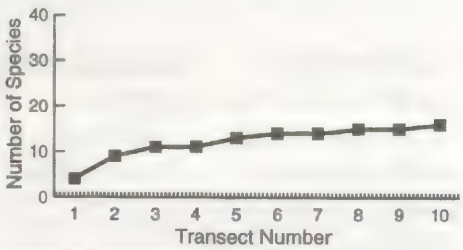
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	41	6	0	47
NUMBER OF INDIVIDUALS	212	9	0	221
NUMBER OF FAMILIES	31	5	0	34
BASAL AREA	7.42	0.014	0	7.44 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 5	Hamamelidaceae 57	*Matudaea trinervia* - 57
Fabaceae 3	Euphorbiaceae 27	*Sebastiana jaliscensis* - 27
Fagaceae 3	Podocarpaceae 12	*Podocarpus richei* - 12
Araceae 2	Theaceae 11	*Symplococarpon purpusii* - 11
Betulaceae 2	Myrsinaceae 11	*Parathesis villosa* - 11
Celastraceae 2	Araceae 10	*Dendropanax arborescens* - 9
Meliaceae 2	Lauraceae 10	*Rondeletia manantlanensis* - 9
Rutaceae 2	Rubiaceae 9	*Magnolia iltisii* - 8
	Fabaceae 8	*Inga eriocarpa* - 5
	Magnoliaceae 8	2 species with 4

SITE NO. 50: Motozintla (motozint)
LOCALITY: Mexico. Chiapas: steep hills just E of Motozintla.
COORDINATES: 15°20' N, 92°12' W
COLLECTORS: J. Miller, J.K. Myers
VOUCHERS: 2726 - 2824
DATES: 8 May 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane dry forest
ELEVATION: 1,600 m
ANN. RAINFALL: 500 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 5.21



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	16	not sampled	not sampled	16
NUMBER OF INDIVIDUALS	107	not sampled	not sampled	107
NUMBER OF FAMILIES	9	not sampled	not sampled	9
BASAL AREA	4.76	not sampled	not sampled	4.76 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 4	Fagaceae 56	*Quercus segoviensis* - 33
Fagaceae 4	Pinaceae 22	*Pinus pseudostrobus* - 22
Verbenaceae 2	Fabaceae 7	*Quercus skinneri* - 11
	Verbenaceae 6	*Quercus* aff. *benthamii* - 9
	Burseraceae 5	*Bursera bipinnata* - 5
	Cactaceae 5	*Opuntia* sp.1 - 5
	Ericaceae 3	*Lippia* aff. *cardiostegia* - 5
	Asteraceae 2	*Diphysa floribunda* - 3
		Quercus sapotifolia - 3
		Arbutus xalapensis - 3

SITE NO. 51: Cerro Oluma (cerroolu)
LOCALITY: Nicaragua. Chontales: Cerro Oluma, forest near top of Cordillera Amerisque.
COORDINATES: 12°18' N, 85°24' W
COLLECTORS: A. Gentry, W.D. Stevens, A. Grijalva, P. Moreno
VOUCHERS: 43865 - 43985
DATES: 3 January 1984

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane moist forest
ELEVATION: 840 m
ANN. RAINFALL: 2,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 49.60

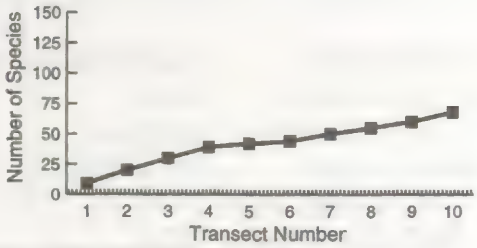
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	71	20	5	96
NUMBER OF INDIVIDUALS	247	36	11	294
NUMBER OF FAMILIES	31	11	5	38
BASAL AREA	4.92	0.033	0.02	4.97

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 8	Euphorbiaceae 42	*Croton schiedeanus* - 32
Bignoniaceae 7	Meliaceae 28	*Guarea glabra* - 26
Rubiaceae 7	Rubiaceae 20	*Chamaedorea* sp.2 - 13
Lauraceae 6	Arecaceae 19	*Miconia impetiolaris* - 8
Moraceae 6	Fabaceae 17	*Mansoa verrucifera* - 7
Piperaceae 5	Melastomataceae 15	*Dendropanax* sp.1 - 7
Arecaceae 4	Myrtaceae 14	5 species with 6
Asteraceae 4	Araliaceae 13	
Euphorbiaceae 4	Bignoniaceae 13	
Myrtaceae 4	Lauraceae 12	

SITE NO. 52: Cerro El Picacho (cerroelp)
LOCALITY: Nicaragua. Matagalpa: Cerro El Picacho.
COORDINATES: 13°00' N, 85°55' W
COLLECTORS: A. Gentry, W.D. Stevens, P. Moreno
VOUCHERS: 44010 - 44087
DATES: 5 - 6 January 1984

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane wet forest
ELEVATION: 1,420 m
ANN. RAINFALL: 2,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 34.77



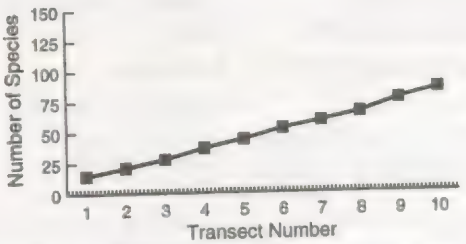
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	58	5	5	68
NUMBER OF INDIVIDUALS	194	11	6	211
NUMBER OF FAMILIES	33	5	4	38
BASAL AREA	10.83	0.0083	0.012	10.85 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 5	Moraceae 26	*Trophis* sp.1 - 23
Celastraceae 4	Juglandaceae 19	*Alfaroa* sp.1 - 17
Arecaceae 3	Asteraceae 16	*Eupatorium* sp.1 - 14
Asteraceae 3	Celastraceae 15	*Myriocarpa* sp.1 - 11
Fabaceae 3	Urticaceae 13	*Quararibea funebris* ssp. *nicaraguensis* - 10
Rubiaceae 3	Arecaceae 12	*Chamaedorea* sp.1 - 9
15 families with 2	Fabaceae 10	*Casearia* sp.1 - 8
	Bombacaceae 10	*Euonymus costaricensis* - 7
	Flacourtiaceae 9	*Dendropanax* sp.1 - 7
	2 families with 8	3 species with 6

SITE NO. 53: Curundu (curundu)
LOCALITY: Panama. Panamá: Pacific side of the former Canal Zone, immediately adjacent to Panama City.
COORDINATES: 08°59' N, 79°33' W
COLLECTORS: A. Gentry
VOUCHERS: 1459 - 1470, 1589 - 1626
DATES: 15 - 24 August 1971

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 20 m
ANN. RAINFALL: 1,830 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 42.44



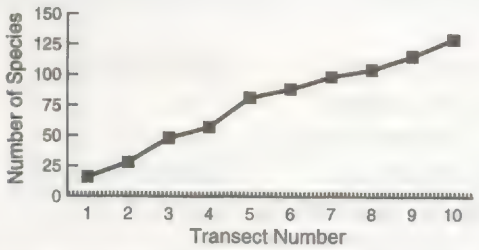
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	62	22	1	85
NUMBER OF INDIVIDUALS	213	58	1	272
NUMBER OF FAMILIES	32	14	1	42
BASAL AREA	2.30	0.043	0.0005	2.34 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 7	Rubiaceae 27	*Mascagnia nervosa* - 18
Rubiaceae 7	Annonaceae 23	*Alibertia edulis* - 17
Sapindaceae 6	Malpighiaceae 18	*Hirtella racemosa* - 16
Annonaceae 5	Chrysobalanaceae 17	*Lacistema aggregatum* - 13
Bignoniaceae 5	Sapindaceae 14	*Annona hayesii* - 12
Dilleniaceae 3	Fabaceae 13	*Trichilia tuberculata* - 10
Boraginaceae 3	Lacistemataceae 13	*Siparuna guianensis* - 8
Lauraceae 3	Anacardiaceae 11	*Neea delicatula* - 8
Tiliaceae 3	Meliaceae 11	*Spondias mombin* - 8
10 families with 2	3 families with 10	2 species with 7

SITE N0. 54: Madden Forest (madden)
LOCALITY: Panama. Panamá: about 9 km S of Madden Dam.
COORDINATES: 09°06' N, 79°36' W
COLLECTORS: A. Gentry
VOUCHERS: 1800 - 1822, 2063 - 2102, 2161 - 2187, 2419 - 2432
DATES: 14 September, 15 October, 8 November, 1971

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 50 m
ANN. RAINFALL: 2,433 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 72.70



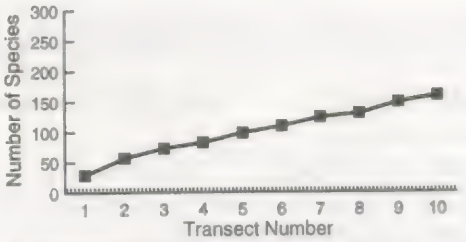
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	96	33	0	129
NUMBER OF INDIVIDUALS	279	77	0	356
NUMBER OF FAMILIES	37	13	0	47
BASAL AREA	3.46	0.089	0	3.55 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 18	Rubiaceae 48	*Oenocarpus mapora* - 26
Rubiaceae 14	Arecaceae 43	*Gustavia superba* - 19
Flacourtiaceae 8	Fabaceae 32	*Faramea occidentalis* - 18
Bignoniaceae 7	Flacourtiaceae 20	*Connarus panamensis* - 15
Arecaceae 5	Lecythidaceae 19	*Heisteria concinna* - 13
Dilleniaceae 5	Connaraceae 15	*Bactris* sp.1 - 12
Sapindaceae 5	Bignoniaceae 15	*Petrea volubilis* - 8
Malpighiaceae 4	Dilleniaceae 13	*Coussarea curvigemma* - 8
Meliaceae 4	Olacaceae 13	*Casearia aculeata* - 7
Tiliaceae 4	Tiliaceae 13	5 species with 6

SITE NO. 55: Pipeline Road (pipeline)
LOCALITY: Panama. Panamá: forest along Pipeline Road.
COORDINATES: 09°10' N, 79°45' W
COLLECTORS: A. Gentry
VOUCHERS: 2661 - 2676, 3165 - 3194, 3219 - 3264, 3271 - 3346
DATES: 22 November, 18 December, 26 December, 1971

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical wet forest
ELEVATION: 300 m
ANN. RAINFALL: 3,000 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 100.82



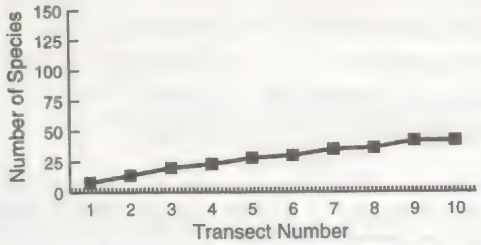
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	125	36	0	161
NUMBER OF INDIVIDUALS	326	71	0	397
NUMBER OF FAMILIES	51	18	0	62
BASAL AREA	2.80	0.098	0	2.90 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Arecaceae 11	Arecaceae 73	*Poulsenia armata* - 17
Fabaceae 9	Moraceae 43	*Geonoma cuneata* - 16
Malpighiaceae 8	Annonaceae 36	*Desmopsis panamensis* - 14
Moraceae 8	Fabaceae 19	*Oxandra longipetala* - 12
Melastomataceae 7	Malpighiaceae 12	*Oenocarpus panamensis* - 11
Sapindaceae 7	Sapindaceae 12	*Socratea durissima* - 11
Annonaceae 7	Bignoniaceae 11	*Bactris coloradensis* - 10
Apocynaceae 6	Rubiaceae 11	*Perebea xanthochyma* - 9
Bignoniaceae 6	Apocynaceae 10	3 species with 8
Rubiaceae 6	Verbenaceae 10	

SITE NO. 56: Luquillo (luquillo)
LOCALITY: Puerto Rico. Luquillo Municipal Caribbean National Forest, Bisley Watershed No. 3 above Verdera Bisley.
COORDINATES: 18°11' N, 65°50' W
COLLECTORS: A. Gentry, J. Ackerman, B. Molano, D. Fernández, D. García, L. Migenes
VOUCHERS: 66038 - 66080
DATES: 4 March 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical wet forest
ELEVATION: 300 m
ANN. RAINFALL: 3,500 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 15.79



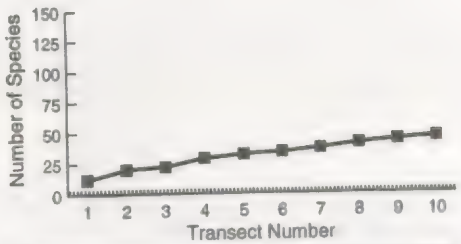
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	36	4	2	42
NUMBER OF INDIVIDUALS	187	11	12	210
NUMBER OF FAMILIES	21	4	2	26
BASAL AREA	4.79	0.017	0.013	4.81 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Melastomataceae 4	Elaeocarpaceae 53	*Sloanea berteriana* - 53
Rubiaceae 4	Arecaceae 23	*Prestoea montana* - 23
Myrtaceae 3	Cyatheaceae 18	*Dacryodes excelsa* - 17
8 families with 2	Burseraceae 17	*Cyathea puertoricensis* - 14
	Flacourtiaceae 12	*Casearia arborea* - 10
	Melastomataceae 11	*Marcgravia rectiflora* - 9
	Fabaceae 10	*Cordia borinquensis* - 8
	Marcgraviaceae 9	*Inga laurina* - 8
	Boraginaceae 8	*Schlegelia brachyantha* - 6
	3 families with 7	*Guarea ramiflora* - 6

SITE NO. 57: Mogotes de Nevárez (mogote)
LOCALITY: Puerto Rico. W of Bayamón.
COORDINATES: 18°25' N, 66°15' W
COLLECTORS: A. Gentry, G. Proctor, C. Taylor, T. Wentworth
VOUCHERS: 66082 - 66134
DATES: 5 - 11 March 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical moist forest
ELEVATION: 50 m
ANN. RAINFALL: 1,500 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 14.40



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	37	9	0	46
NUMBER OF INDIVIDUALS	306	31	0	337
NUMBER OF FAMILIES	22	8	0	26
BASAL AREA	3.64	0.022	0	3.66 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Euphorbiaceae 4	Euphorbiaceae 64	*Drypetes alba* - 55
Myrtaceae 4	Rhamnaceae 54	*Krugiodendron ferreum* - 54
Rubiaceae 4	Oleaceae 38	*Chionanthus dominguensis* - 38
Celastraceae 3	Sapindaceae 38	*Exothea paniculata* - 37
Polygonaceae 3	Burseraceae 28	*Bursera simaruba* - 28
Sapotaceae 3	Polygonaceae 23	*Coccoloba* sp.1 - 9
5 families with 2	Myrtaceae 15	*Coccoloba* sp.2 - 9
	4 families with 9	*Stigmaphyllon floribundum* - 8
		Guapira fragrans - 8
		Eugenia foetida - 7

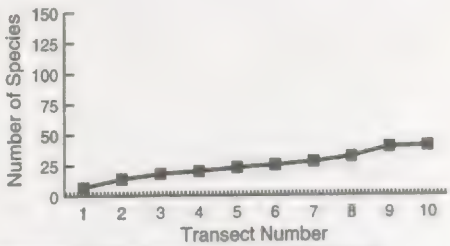
Section 3. Location of transects from South America, sites 58–183.

58 – Parque El Rey, Argentina
59 – Arroyo Riachuelo, Argentina
60 – Salta, Argentina
61 – 76 – **Bolivia**
77 – Alter do Chao, Brazil
78 – Boraceia, Brazil
79 – Campinas, Brazil
80 – Carajas, Brazil
81 – Carlos Botelho State Park, Brazil
82 – Ducke Reserve, Brazil
83 – Camorin-Jacarepaguá, Brazil
84 – Linhares, Brazil
85 – Manaus, Brazil
86 – Belém-Mocambo, Brazil
87 – Alto de Mirador, Chile
88 – Bosque de San Martín, Chile
89 – Puyehue, Chile
90 – 123 – **Colombia**
124 – 142 – **Ecuador**
143 – Saul, French Guiana
144 – Berbice River, Guyana
145 – Río Jejuimi, Paraguay
146 – 178 – **Peru**
179 – Blohm Ranch, Venezuela
180 – Boca de Uchire, Venezuela
181 – Cerro de la Neblina 1, Venezuela
182 – Cerro de la Neblina 2, Venezuela
183 – Estación Biológica de los Llanos, Venezuela

SITE NO. 58: Parque El Rey (parqueer)
LOCALITY: Argentina. Salta: Departamento Anta, Parque Nacional El Rey, trail from Intendencia to Arroyo Aguas.
COORDINATES: 24°35' S, 64°42' W
COLLECTORS: A. Gentry, R. Neumann, C. Palací, L. Malmierca
VOUCHERS: 51742 - 51797
DATES: 23 - 24 September 1985

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane moist forest
ELEVATION: 1,000 m
ANN. RAINFALL: 1,500 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 16.07



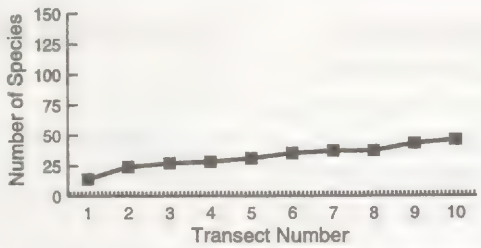
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	31	10	0	41
NUMBER OF INDIVIDUALS	146	44	0	190
NUMBER OF FAMILIES	21	7	0	27
BASAL AREA	3.27	0.072	0	3.34 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Myrtaceae 5	Myrtaceae 78	*Eugenia uniflora* - 54
Sapindaceae 4	Amaranthaceae 16	*Myrrhinium loranthoides* - 17
Amaranthaceae 3	Bignoniaceae 16	*Macfadyena unguis-cati* - 16
Solanaceae 3	Sapindaceae 16	*Ruprechtia laxiflora* - 11
Fabaceae 2	Polygonaceae 11	*Allophylus edulis* - 11
Lauraceae 2	Combretaceae 7	*Chamissoa altissima* - 10
Piperaceae 2	Piperaceae 6	*Terminalia triflora* - 7
	Solanaceae 6	*Vassobia breviflora* - 4
	Myrsinaceae 4	*Myrsine laetevirens* - 4
	4 families with 3	*Chamissoa acuminata* var. *maximilianii* - 4

SITE NO. 59: Arroyo Riachuelo (riachuel)
LOCALITY: Argentina. Corrientes: Arroyo Riachuelo, 10 km SE of Corrientes, 1 km past bridge over Arroyo Riachuelo.
COORDINATES: 27° S, 58° W
COLLECTORS: A. Gentry, C. Cristobal, A. Schinini
VOUCHERS: 59447 - 59463
DATES: 29 September 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate moist forest
ELEVATION: 60 m
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 12.54



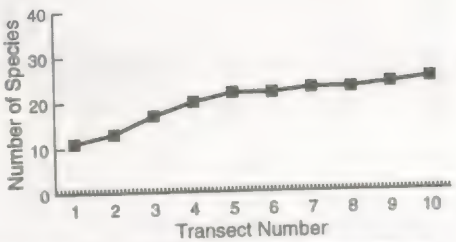
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	38	7	1	46
NUMBER OF INDIVIDUALS	357	121	1	479
NUMBER OF FAMILIES	25	6	1	27
BASAL AREA	6.90	0.29	0.0064	7.19 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Myrtaceae 5	Meliaceae 92	*Trichilia elegans* - 92
Fabaceae 4	Apocynaceae 57	*Casearia sylvestris* - 49
Bignoniaceae 3	Flacourtiaceae 49	*Forsteronia glabrescens* - 47
Sapindaceae 3	Bignoniaceae 33	*Celtis iguanea* - 30
Solanaceae 3	Sapindaceae 30	*Macfadyena unguis-cati* - 28
6 families with 2	Ulmaceae 30	*Chrysophyllum marginatum* - 24
	Fabaceae 27	*Patagonula americana* - 23
	Myrtaceae 27	*Gledistsia amorphoides* - 18
	Boraginaceae 25	*Allophylus edulis* - 17
	Sapotaceae 24	*Myrcianthes pungens* - 16

SITE NO. 60: Salta (salta)
LOCALITY: Argentina. Salta: Capital, hills E of Salta, Barrio Tres Corritos.
COORDINATES: 24°40' S, 64°30' W
COLLECTORS: A. Gentry, C. Palacios
VOUCHERS: 51730 - 51740
DATES: 22 September 1985

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane dry forest
ELEVATION: 1,300 - 1,400 m
ANN. RAINFALL: 712 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 7.59



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	22	3	0	25
NUMBER OF INDIVIDUALS	193	4	0	197
NUMBER OF FAMILIES	14	3	0	15
BASAL AREA	2.36	0.002	0	2.37 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 7	Fabaceae 128	*Anadenanthera colubrina* - 53
Anacardiaceae 2	Asteraceae 14	*Acacia praecox* - 45
Asteraceae 2	Sapindaceae 14	*Acacia visco* - 21
Bignoniaceae 2	Polygonaceae 11	*Eupatorium* sp.1 - 12
Sapindaceae 2	Nyctaginaceae 5	*Allophylus edulis* - 12
	Ulmaceae 5	*Ruprechtia apetala* - 11
	Bignoniaceae 4	*Celtis pubescens* - 5
	Bombacaceae 4	*Bougainvillea stipitata* - 5
	Caricaceae 3	*Acacia tucamanensis* - 5
	3 families with 2	*Chorisia insignis* - 4

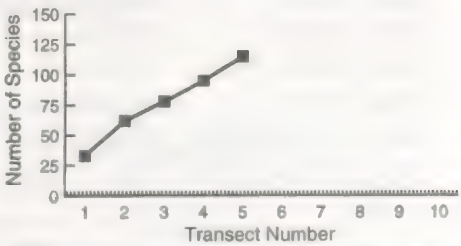
3A. Bolivia, sites 61–76.

61 – Calabatea, Bolivia
62 – Chaquimayo, Bolivia
63 – Curuyuqui, Bolivia
64 – Curuyuqui Riverine, Bolivia
65 – El Encanto, Bolivia
66 – Incahuara, Bolivia
67 – Alto Madidi, Bolivia
68 – Alto Madidi, Ridge Top, Bolivia
69 – Nuevo Mundo, Bolivia
70 – Perseverancia, Bolivia
71 – Quiapaca, Bolivia
72 – Río Negro, Bolivia
73 – Sacramento, Bolivia
74 – Santa Cruz, Bolivia
75 – Santiago, Bolivia
76 – Yanaígua, Bolivia

SITE NO. 61: Calabatea (calabate)
LOCALITY: Bolivia. La Paz: Provincia Franz Tamayo, 44 km SW of Apolo, ca. 10 km S of Correo, drainage of Río Yuyo.
COORDINATES: 14°55' S, 68°20' W
COLLECTORS: A. Gentry, S. Beck
VOUCHERS: 70899 - 71023
DATES: 4 - 6 June 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane wet forest
ELEVATION: 1,500 - 1,550 m
ANN. RAINFALL: 2,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 500 m^2
FISHER'S ALPHA: 76.34



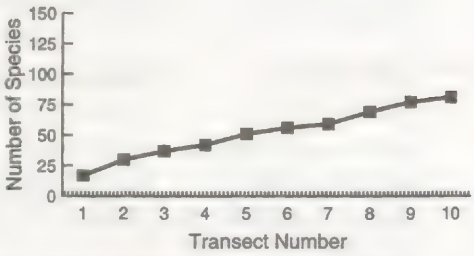
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	89	17	9	115
NUMBER OF INDIVIDUALS	229	27	12	268
NUMBER OF FAMILIES	35	11	6	47
BASAL AREA	2.58	0.029	0.014	2.63 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 14	Rubiaceae 41	*Piper* sp.1 - 18
Melastomataceae 12	Melastomataceae 34	*Henriettella* sp.1 - 12
Fabaceae 9	Fabaceae 19	*Perebea guianensis* ssp. *guianensis* - 11
Lauraceae 6	Piperaceae 19	*Psychotria tinctoria* - 9
Araceae 4	Arecaceae 18	*Bathysa obovata* - 9
Arecaceae 4	Moraceae 13	*Cyathea* sp.1 - 8
Cecropiaceae 4	Sapotaceae 12	*Pouteria* sp.1 - 7
Sapotaceae 4	Cyatheaceae 11	*Hyeronima alchorneoides* - 7
Bignoniaceae 4	Euphorbiaceae 11	*Socratea exorrhiza* - 6
Moraceae 4	Lauraceae 10	*Miconia* sp.2 - 6

SITE NO. 62: Chaquimayo (chaquima)
LOCALITY: Bolivia. La Paz: 17 km NW of Apolo near Río Machariapo.
COORDINATES: 14°34' S, 68°28' W
COLLECTORS: A. Gentry
VOUCHERS: 71048 - 71156
DATES: 10 - 13 June 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane moist forest
ELEVATION: 1,000 m
ANN. RAINFALL: 1,600 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 28.42



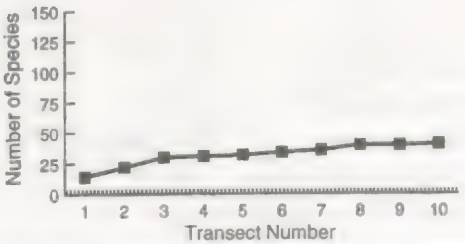
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	52	28	1	81
NUMBER OF INDIVIDUALS	338	124	1	463
NUMBER OF FAMILIES	25	12	1	29
BASAL AREA	4.38	0.18	0.15	4.71 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 17	Fabaceae 108	*Opuntia brasiliensis* - 69
Bignoniaceae 11	Cactaceae 74	*Clavija* sp.1 - 37
Apocynaceae 5	Bignoniaceae 44	*Coffea arabica* - 35
Cactaceae 4	Theophrastaceae 37	*Capparis reisca* - 33
Sapindaceae 4	Rubiaceae 36	*Anadenanthera colubrina* var. *cebil* - 24
Ulmaceae 4	Capparidaceae 33	*Acacia* sp.1 - 21
Euphorbiaceae 3	Opiliaceae 17	*Agonandra* sp.1 - 17
Meliaceae 3	Phytolaccaceae 15	*Clytostoma uleanum* - 17
Phytolaccaceae 3	Sapindaceae 14	3 species with 12
7 families with 2	Meliaceae 11	

SITE NO. 63: Curuyuqui (curuyuqu)
LOCALITY: Bolivia. Santa Cruz: Curuyuqui, 50 km S of Santa Cruz on Río Parapetí, chaco upland thorn forest.
COORDINATES: 18°45'56" S, 62°13'59" W
COLLECTORS: A. Gentry, R. Foster, M. Peña
VOUCHERS: 75181 - 75211
DATES: 25 October 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical thorn woodland
ELEVATION: 350 m
ANN. RAINFALL: 450 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 11.24



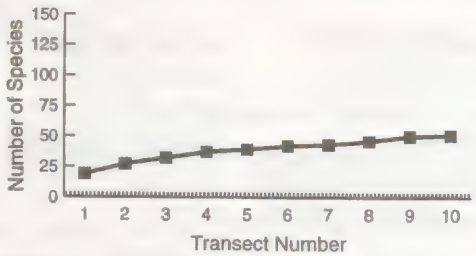
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	29	12	0	41
NUMBER OF INDIVIDUALS	348	72	0	420
NUMBER OF FAMILIES	17	8	0	23
BASAL AREA	4.11	0.061	0	4.17 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Cactaceae 7	Polygonaceae 110	*Ruprechtia triflora* - 108
Fabaceae 5	Capparaceae 67	*Capparis retusa* - 39
Capparaceae 3	Fabaceae 52	*Dicliptera* sp.1 - 33
Convolvulaceae 3	Cactaceae 44	*Piptadenia viridifolia* - 25
Apocynaceae 2	Acanthaceae 33	*Bougainvillea praecox* - 23
Bignoniaceae 2	Nyctaginaceae 23	*Stetsonia coryne* - 18
Polygonaceae 2	Apocynaceae 14	*Capparis salicifolia* - 15
Ulmaceae 2	Convolvulaceae 14	*Capparis speciosa* - 13
	Bignoniaceae 10	*Cereus stenagonus* - 11
	Zygophyllaceae 10	2 species with 10

SITE NO. 64: Curuyuqui Riverine (curuyuqr)
LOCALITY: Bolivia. Santa Cruz: Curuyuqui, 50 km S of Santa Cruz on Río Parapeti, riverine forest, seasonally flooded.
COORDINATES: 18°46' S, 62°18' W
COLLECTORS: A. Gentry, M. Peña
VOUCHERS: 75233 - 75282
DATES: 26 October 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical thorn woodland
ELEVATION: 350 m
ANN. RAINFALL: 450 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 16.11



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	43	8	0	51
NUMBER OF INDIVIDUALS	249	117	0	366
NUMBER OF FAMILIES	18	6	0	21
BASAL AREA	5.90	0.11	0	6.01 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 10	Bignoniaceae 67	*Arrabidaea corallina* - 66
Nyctaginaceae 5	Fabaceae 47	*Achatocarpus praecox* - 32
Capparaceae 4	Polygonaceae 45	*Phyllostylon rhamnoides* - 30
Rubiaceae 4	Phytolaccaceae 33	*Ruprechtia triflora* - 23
Malpighiaceae 3	Ulmaceae 31	*Serjania* sp.1 - 21
Polygonaceae 3	Apocynaceae 28	*Acacia bonariensis* - 20
7 families with 2	Sapindaceae 27	*Coccoloba* sp.2 - 16
	Capparaceae 26	*Forsteronia* sp.1 - 15
	Nyctaginaceae 14	*Capparis tweediana* - 13
	3 families with 8	*Aspidosperma pyrifolia* - 13

SITE NO. 65: El Encanto (encanto)
LOCALITY: Bolivia. Santa Cruz: El Encanto Camp, near El Encanto waterfall, edge of Huanchaca Plateau.
COORDINATES: 14°38' S, 60°42' W
COLLECTORS: A. Gentry, B. Mestacedo
VOUCHERS: 75525 - 75655
DATES: 4 - 6 November 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical moist forest
ELEVATION: 280 m
ANN. RAINFALL: 1,700 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 60.25

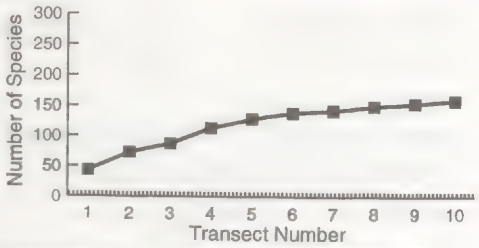
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	74	37	0	111
NUMBER OF INDIVIDUALS	218	102	0	320
NUMBER OF FAMILIES	30	16	0	39
BASAL AREA	3.71	0.24	0	3.94 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 16	Bignoniaceae 51	*Metrodorea flavida* - 38
Fabaceae 15	Rutaceae 43	*Allophylus edulis* - 16
Arecaceae 5	Arecaceae 26	*Scheelea* sp.1 - 14
Sapindaceae 5	Fabaceae 26	*Clytostoma uleanum* - 12
Annonaceae 5	Combretaceae 23	*Combretum* sp.3 - 11
Meliaceae 4	Sapindaceae 20	*Picramnia* sp.1 - 11
Myrtaceae 4	Myrtaceae 14	*Calyptranthes* sp.1 - 10
Rubiaceae 4	Simaroubaceae 11	*Euterpe* sp.1 - 7
7 families with 3	Annonaceae 9	*Combretum* sp.2 - 7
	2 families with 8	*Myroxylon* sp.1 - 6

SITE NO. 66: Incahuara (incahuar)
LOCALITY: Bolivia. La Paz: Nor Yungas Provincia. 4 km NE of Incahuara, 13.5 km above San Pedro, trail to 12 de Octubre.
COORDINATES: 15°55' S, 67°35' W
COLLECTORS: A. Gentry, J. Solomon
VOUCHERS: 44398 - 44658
DATES: 22 - 25 January 1984

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane wet forest
ELEVATION: 1,520 - 1,560 m
ANN. RAINFALL: 3,500 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 78.79



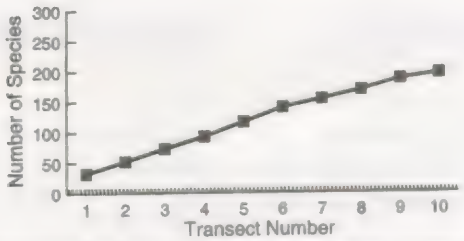
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	141	12	6	159
NUMBER OF INDIVIDUALS	470	28	16	514
NUMBER OF FAMILIES	35	8	5	44
BASAL AREA	3.25	0.021	0.019	3.29 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Melastomataceae 25	Melastomataceae 80	*Cyathea lechleri* - 30
Lauraceae 22	Cyatheaceae 61	*Cyathea bipinnatifida* - 25
Rubiaceae 13	Lauraceae 59	*Mabea* sp.1 - 23
Myrtaceae 9	Euphorbiaceae 42	Indet. gen. 1 sp.1 - 18
Euphorbiaceae 7	Rubiaceae 39	*Tovomita weddeliana* - 13
6 families with 5	Myrtaceae 19	*Miconia* sp.1 - 12
	Indet. fam. 18	*Guatteria* sp.1 - 11
	Arecaceae 16	Melastomataceae gen.12 sp.1 - 9
	Annonaceae 16	*Dictyocaryum lamarckianum* - 9
	Clusiaceae 15	3 species with 8

SITE NO. 67: Alto Madidi (madidi)
LOCALITY: Bolivia. La Paz: Alto Madidi across from mouth of Río Enlatagua.
COORDINATES: 13°35' S, 68°46' W
COLLECTORS: A. Gentry, S. Estensoro
VOUCHERS: 70228 - 70468
DATES: 21 - 23 May 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical wet forest
ELEVATION: 280 m
ANN. RAINFALL: 3,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 147.65



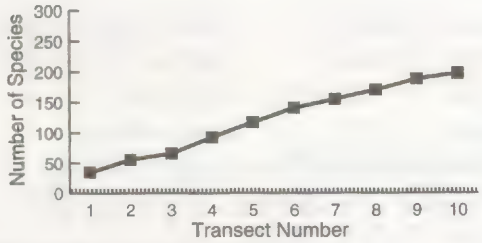
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	146	48	3	197
NUMBER OF INDIVIDUALS	319	74	20	413
NUMBER OF FAMILIES	44	21	3	63
BASAL AREA	4.54	0.17	0.01	4.72 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 17	Bignoniaceae 29	*Pausandra trianae* - 24
Bignoniaceae 15	Euphorbiaceae 27	*Polybotrya caudata* - 17
Moraceae 13	Fabaceae 25	*Virola calophylla* - 9
Lauraceae 10	Myristicaceae 23	*Euterpe precatoria* - 9
Melastomataceae 8	Violaceae 23	*Leonia glycicarpa* - 9
Sapotaceae 7	Moraceae 21	*Coussarea* cf. *regnelliana* - 9
Meliaceae 6	Arecaceae 19	*Iryanthera olacoides* - 8
Myristicaceae 6	Monimiaceae 18	*Siparuna decipiens* - 7
3 families with 5	Aspleniaceae 17	*Rinorea viridifolia* - 7
	Meliaceae 16	*Guarea pterorachis* - 7

SITE NO. 68: Alto Madidi, ridge top (madidiri)
LOCALITY: Bolivia. La Paz: Alto Madidi, ridge top 7 km NE of camp.
COORDINATES: 13°35' S, 68°46' W
COLLECTORS: A. Gentry, S. Estensoro
VOUCHERS: 70535 - 70771
DATES: 25 - 28 May 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical wet forest
ELEVATION: 360 - 380 m
ANN. RAINFALL: 3,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 101.52



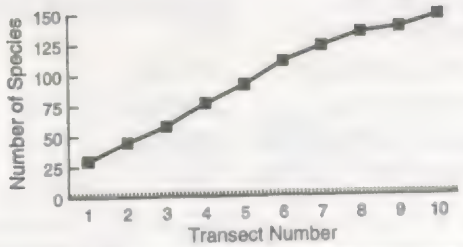
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	128	46	0	174
NUMBER OF INDIVIDUALS	381	81	0	462
NUMBER OF FAMILIES	40	18	0	50
BASAL AREA	4.23	0.10	0	4.33 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 21	Violaceae 75	*Rinorea viridifolia* - 75
Fabaceae 20	Meliaceae 42	*Trichilia pleeana* - 29
Meliaceae 8	Rubiaceae 38	*Garcinia* sp.1 - 15
Sapindaceae 7	Clusiaceae 32	*Hasseltia floribunda* - 11
Sapotaceae 7	Fabaceae 30	*Drypetes* sp.1 - 11
Bignoniaceae 7	Euphorbiaceae 19	*Sorocea guilleminiana* - 9
Lauraceae 7	Bignoniaceae 18	*Maytenus macrocarpa* - 9
Euphorbiaceae 6	Sapindaceae 15	*Heisteria* sp.1 - 7
Malpighiaceae 5	Celastraceae 15	3 species with 6
Menispermaceae 5	3 families with 13	

SITE NO. 69: Nuevo Mundo (nuevomun)
LOCALITY: Bolivia. Pando: Nuevo Mundo, Campamento 18, 18 km N of airstrip.
COORDINATES: 10°39' S, 66°46' W
COLLECTORS: A. Gentry, L. Vargas, A. Perry, M. Apuriz
VOUCHERS: 77590 - 77766
DATES: 2 - 4 July 1992

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 160 m
ANN. RAINFALL: 1,820 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 95.79



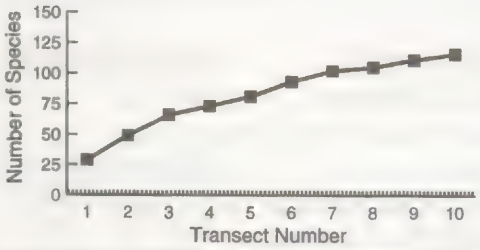
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	116	32	1	149
NUMBER OF INDIVIDUALS	295	62	1	358
NUMBER OF FAMILIES	35	9	1	41
BASAL AREA	4.29	0.20	0.0005	4.49 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 21	Arecaceae 55	*Phenakospermum guianensis* - 33
Bignoniaceae 11	Fabaceae 55	*Bactris* sp.1 - 30
Moraceae 11	Musaceae 33	*Piper* sp.1 - 18
Arecaceae 8	Bignoniaceae 18	*Lonchocarpus* sp.1 - 11
Cecropiaceae 7	Piperaceae 18	*Sclerolobium* sp.1 - 10
Annonaceae 7	Moraceae 15	*Carpotroche longifolia* - 10
Lauraceae 7	Euphorbiaceae 12	*Siparuna decipiens* - 8
Lecythidaceae 7	Burseraceae 11	*Combretum* sp.1 - 7
Melastomataceae 6	Cecropiaceae 11	*Quararibea* cf. *wittii* - 7
3 families with 5	Bombacaceae 11	3 species with 6

SITE NO. 70: Perseverancia (persever)
LOCALITY: Bolivia. Santa Cruz: Perseverancia, NW of Santa Cruz on Río Negro.
COORDINATES: 14°38' S, 62°37' W
COLLECTORS: A. Gentry, M. Peña
VOUCHERS: 73637 - 73776
DATES: 11 - 13 May 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical moist forest
ELEVATION: 100
ANN. RAINFALL: 1,350 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 50.99



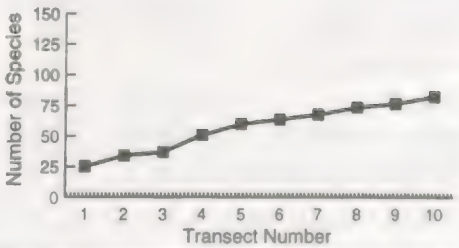
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	70	46	0	116
NUMBER OF INDIVIDUALS	288	157	0	445
NUMBER OF FAMILIES	31	17	0	40
BASAL AREA	2.82	0.33	0	3.15 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 17	Euphorbiaceae 88	*Pausandra trianae* - 73
Fabaceae 10	Rutaceae 82	*Galipea longifolia* - 67
Sapotaceae 6	Bignoniaceae 56	*Metrodorea flavida* - 14
Sapindaceae 5	Sapindaceae 17	*Plukenetia* sp.1 - 13
Moraceae 5	Celastraceae 17	Connaraceae gen. 1 sp.1 - 13
Myrtaceae 5	Myrtaceae 17	*Prionostemma aspera* - 12
Flacourtiaceae 4	Fabaceae 15	*Clytostoma uleanum* - 11
Malpighiaceae 4	Connaraceae 14	*Styrax* sp.1 - 9
Meliaceae 4	Combretaceae 12	*Dendropanax arboreus* - 8
Lauraceae 4	Sapotaceae 10	2 species with 7

SITE NO. 71: Quiapaca (quiapaca)
LOCALITY: Bolivia. Santa Cruz: Quiapaca, 10 km N of Santiago, valley of Rio Tucuvaca.
COORDINATES: 18°20' S, 59°30' W
COLLECTORS: A. Gentry, M. Peña, B. Mostacedo
VOUCHERS: 73881 - 73975
DATES: 16 May 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical dry forest
ELEVATION: 300 m
ANN. RAINFALL: 900 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 32.05



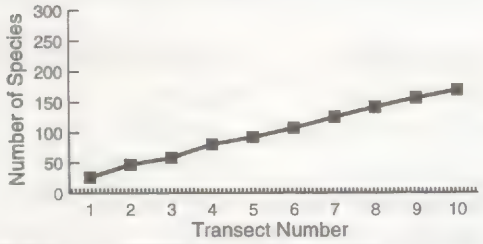
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	53	30	0	83
NUMBER OF INDIVIDUALS	275	120	0	395
NUMBER OF FAMILIES	21	14	0	28
BASAL AREA	3.06	0.19	0	3.25 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 16	Fabaceae 69	*Allophylus edulis* - 49
Bignoniaceae 13	Sapindaceae 67	*Achatocarpus nigricans* - 22
Sapindaceae 6	Bignoniaceae 56	*Calliandra* sp.1 - 20
Rubiaceae 4	Myrtaceae 30	*Thryallis* sp.1 - 20
Apocynaceae 3	Phytolaccaceae 25	*Phyllostylon rhamnoides* - 16
Flacourtiaceae 3	Malpighiaceae 21	*Eugenia uniflora* - 15
Myrtaceae 3	Ulmaceae 18	*Arrabidaea florida* - 14
Nyctaginaceae 3	Apocynaceae 14	*Myrciaria cuspidata* - 13
Phytolaccaceae 3	Nyctaginaceae 13	*Capparis retusa* - 11
10 families with 2	Capparaceae 12	*Arrabidaea fagoides* - 11

SITE NO. 72: Río Negro (rionegr)
LOCALITY: Bolivia. Pando: Río Negro, near junction with Río Abuna.
COORDINATES: 9°50' S, 65°40' W
COLLECTORS: A. Gentry, A. Perry
VOUCHERS: 77781 - 77981A
DATES: 4 - 8 July 1992

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 100 m
ANN. RAINFALL: 1,820 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 138.34



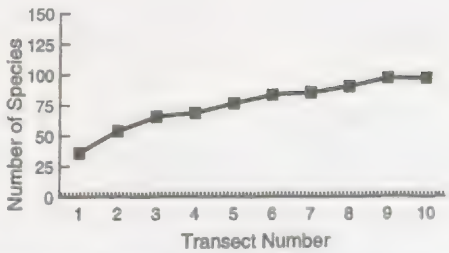
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	130	36	3	169
NUMBER OF INDIVIDUALS	262	66	3	331
NUMBER OF FAMILIES	39	17	3	52
BASAL AREA	2.93	0.57	0.014	3.51 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 21	Fabaceae 58	*Phenakospermum guyannense* - 27
Moraceae 18	Moraceae 34	*Scheelea princeps* - 14
Burseraceae 9	Strelitziaceae 27	*Lonchocarpus* sp.1 - 12
Bignoniaceae 9	Arecaceae 22	*Tachigali* sp.1 - 9
Sapotaceae 7	Burseraceae 17	*Euterpe precatoria* - 6
Annonaceae 7	Bignoniaceae 16	*Nealchornea* sp.1 - 5
Rubiaceae 7	Euphorbiaceae 12	*Tapirira guianensis* - 5
Euphorbiaceae 6	Myristicaceae 11	*Tetragastris altissima* - 5
Myristicaceae 6	Sapotaceae 10	*Combretum* sp.1 - 5
Lecythidaceae 5	Rubiaceae 10	*Hymenaea* sp.1 - 5

SITE NO. 73: Sacramento (sacram)
LOCALITY: Bolivia. La Paz: Sacramento, valley of Río Coroico, 10 km NE of Chuspipata on Coroico road.
COORDINATES: 16°18' S, 67°48' W
COLLECTORS: A. Gentry, J. Solomon
VOUCHERS: 44668 - 44819, 52024 - 52103
DATES: 27 -30 January 1984, 4 - 5 October 1985

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical montane rain forest
ELEVATION: 2,380 - 2,450 m
ANN. RAINFALL: 2,450 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 34.70



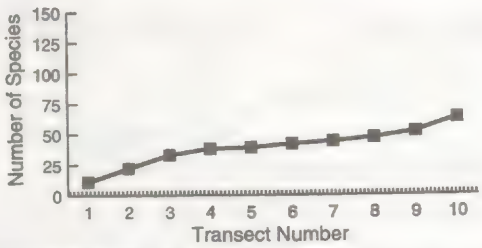
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	78	16	4	98
NUMBER OF INDIVIDUALS	418	90	42	550
NUMBER OF FAMILIES	25	8	4	33
BASAL AREA	2.94	0.059	0.31	3.31 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Melastomataceae 17	Euphorbiaceae 63	*Alchornea pearcei* - 47
Rubiaceae 12	Melastomataceae 63	*Hedyosmum racemosum* - 31
Lauraceae 9	Rubiaceae 42	*Weinmannia* sp.1 - 28
Asteraceae 7	Cunoniaceae 36	*Cyathea delgadii* - 22
Cyatheaceae 4	Cyatheaceae 33	*Clusia volubilis* - 22
Myrsinaceae 4	Chloranthaceae 32	*Monnina* sp.1 - 20
5 families with 3	Asteraceae 30	*Psychotria* sp.4 - 19
	Myrsinaceae 29	*Miconia brittonii* - 16
	Lauraceae 28	*Vernonia* sp.1 - 15
	Clusiaceae 22	*Hyeronima moritziana* - 15

SITE NO. 74: Santa Cruz (santacru)
LOCALITY: Bolivia. Santa Cruz: Santa Cruz Botanical Garden, 12 km E of Santa Cruz.
COORDINATES: 17°46' S, 63°04' W
COLLECTORS: A. Gentry, M. Nee, M. Saldiás
VOUCHERS: 73600 - 73636, 74063 - 74085
DATES: 7 May 1991, 18 May 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical moist forest
ELEVATION: 375 m
ANN. RAINFALL: 1,200 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 34.46



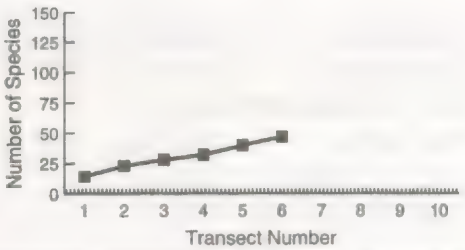
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	37	26	0	63
NUMBER OF INDIVIDUALS	105	75	0	180
NUMBER OF FAMILIES	24	13	0	31
BASAL AREA	3.63	0.15	0	3.78 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 12	Bignoniaceae 38	*Adenocalymna purpurascens* - 13
Fabaceae 6	Fabaceae 16	*Trigonia boliviensis* - 10
Nyctaginaceae 4	Ulmaceae 15	*Casearia gossypiosperma* - 9
Apocynaceae 3	Apocynaceae 11	*Phyllostylon rhamnoides* - 9
Sapindaceae 3	Flacourtiaceae 10	*Aspidosperma cylindrocarpon* - 8
Ulmaceae 3	Nyctaginaceae 10	*Acacia glomerosa* - 8
7 families with 2	Trigoniaceae 10	*Urera baccifera* - 7
	Myrtaceae 9	*Parabignonia chodatii* - 7
	Polygonaceae 7	*Myrciaria cauliflora* - 7
	Urticaceae 7	*Triplaris* sp.1 - 6

SITE NO. 75: Santiago (santiago)
LOCALITY: Bolivia. Santa Cruz: Cerro de Santiago, 4 km NE of Santiago.
COORDINATES: 18°20' S, 59°30' W
COLLECTORS: A. Gentry, M. Peña, C.B. Mostacedo, R. Foster
VOUCHERS: 73987 - 74024, 75459 - 75518
DATES: 17 May 1991, October 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical dry forest
ELEVATION: 700 - 800 m
ANN. RAINFALL: 990 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 600 m^2
FISHER'S ALPHA: 20.76



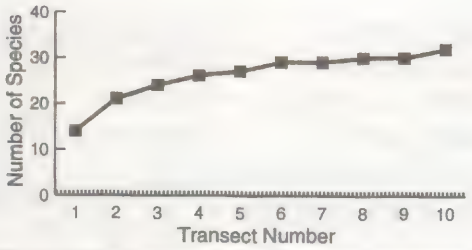
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	45	2	0	47
NUMBER OF INDIVIDUALS	169	10	0	179
NUMBER OF FAMILIES	27	2	0	27
BASAL AREA	1.40	0.03	0	1.43 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 6	Erythroxylaceae 33	*Erythroxylum daphnites* - 23
Bignoniaceae 4	Fabaceae 26	*Lafoensia pacari* - 16
Combretaceae 3	Lythraceae 16	*Macrolobium* sp.1 - 16
Sapindaceae 3	Sapindaceae 15	*Astronium fraxinifolium* - 11
8 families with 2	Anacardiaceae 12	*Erythroxylum suberosum* - 10
	Bignoniaceae 12	*Serjania platycarpa* - 9
	Apocynaceae 9	*Aspidosperma tomentosum* - 9
	Flacourtiaceae 6	*Tabebuia roseo-alba* - 6
	4 families with 5	3 species with 5

SITE NO. 76: Yanaígua (yanaigua)
LOCALITY: Bolivia. Santa Cruz:Yanaígua, 30 km W of Paraguay border.
COORDINATES: 19°42' S, 62°06' W
COLLECTORS: A. Gentry
VOUCHERS: 75368 - 75401
DATES: 29 October 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical thorn woodland
ELEVATION: 250 m
ANN. RAINFALL: 400 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 8.49



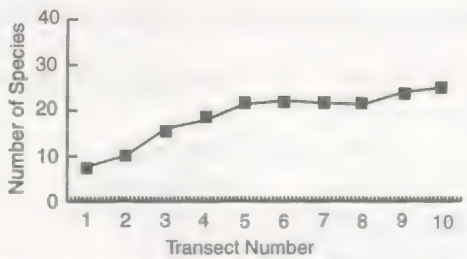
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	27	5	0	32
NUMBER OF INDIVIDUALS	351	9	0	360
NUMBER OF FAMILIES	15	4	0	18
BASAL AREA	3.80	0.009	0	3.81 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Cactaceae 7	Polygonaceae 182	*Ruprechtia triflora* - 182
Fabaceae 7	Fabaceae 79	*Piptadenia viridiflora* - 25
Capparaceae 3	Capparaceae 44	*Capparis speciosa* - 24
	Nyctaginaceae 14	*Mimosa* sp.1 - 20
	Cactaceae 11	*Acacia feddeana* - 18
	Apocynaceae 8	*Capparis retusa* - 14
	Simaroubaceae 4	*Bougainvillea praecox* - 14
	Bignoniaceae 3	*Aspidosperma quebracho-blanco* - 8
	Bombacaceae 3	*Cercidium praecox* - 8
	3 families with 2	*Capparis salicifolia* - 6

SITE NO. 77: Alter do Chão (alterdoc)
LOCALITY: Brazil. Pará: Alter do Chão, ca. 30 km SW of Santarém.
COORDINATES: 02°30' S, 54°58' W
COLLECTORS: G. dos Santos, A. Gentry, R. Ortiz
VOUCHERS: 620 - 652
DATES: 10 January 1992

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 50 m
ANN. RAINFALL: 2,000 mm *
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 13.03



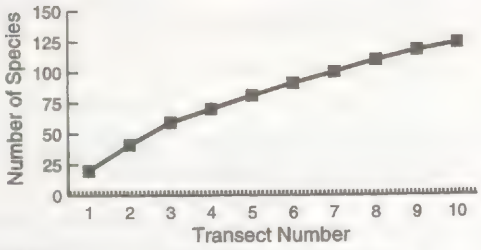
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	30	3	1	34
NUMBER OF INDIVIDUALS	158	5	1	164
NUMBER OF FAMILIES	17	2	1	19
BASAL AREA	1.62	0.0047	0.0028	1.63 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 6	Fabaceae 40	*Sclerolobium* sp.1 - 26
Annonaceae 3	Sapotaceae 19	Sapotaceae gen.1 sp.1 - 19
Vochysiaceae 3	Malpighiaceae 17	*Byrsonima* sp.2 - 11
Anacardiaceae 2	Annonaceae 16	*Xylopia* sp.1 - 10
Dilleniaceae 2	Vochysiaceae 15	*Qualea* sp.1 - 10
Flacourtiaceae 2	Flacourtiaceae 9	*Lafoensia* sp.1 - 7
Malpighiaceae 2	Lythraceae 7	*Simarouba amara* - 7
Myrtaceae 2	Myrtaceae 7	*Byrsonima* sp.1 - 6
Sapindaceae 2	Simaroubaceae 7	*Casearia* sp.1 - 6
	Melastomataceae 6	*Miconia* sp.1 - 6

SITE NO. 78: Boraceia (boraceia)
LOCALITY: Brazil. São Paulo: Boraceia, between Moji das Cruzes and Biritibe-Miram, 14 km from coast.
COORDINATES: 23°23' S, 46°00' W
COLLECTORS: A. Custidio Filho, A. Gentry
VOUCHERS: 4516 - 4595
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane rain forest
ELEVATION: 800 m
ANN. RAINFALL: 3,500 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 57.99



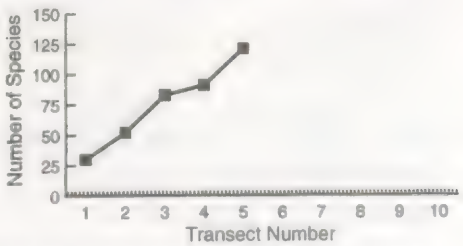
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	102	19	3	124
NUMBER OF INDIVIDUALS	387	34	13	434
NUMBER OF FAMILIES	33	12	3	43
BASAL AREA	5.51	0.077	0.024	5.61 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Myrtaceae 29	Arecaceae 93	*Euterpe edulis* - 72
Lauraceae 12	Rubiaceae 71	*Psychotria suterella* - 40
Fabaceae 8	Myrtaceae 70	*Geonoma gamiova* - 21
Rubiaceae 8	Lauraceae 32	*Bathysa mendionalis* - 20
Sapindaceae 5	Monimiaceae 20	*Mollinedia* sp.3 - 12
Myrsinaceae 5	Nyctaginaceae 17	*Polybotrya cylindrica* - 11
Monimiaceae 4	Fabaceae 16	Nyctaginaceae gen. 1 sp.1 - 11
Sapotaceae 3	Aspleniaceae 11	*Eriotheca macrophylla* - 11
Bignoniaceae 3	Bombacaceae 11	*Ocotea* sp.1 - 9
13 families with 2	Sapindaceae 10	2 species with 8

SITE NO. 79: Campinas (campinas)
LOCALITY: Brazil. São Paulo: Santa Genebrea, UNICAMP Forest reserve, near Campinas, Betel.
COORDINATES: 22°50' S, 47°08' W
COLLECTORS: A. Gentry, E. Zardini
VOUCHERS: 49148 - 49178, 58688 - 59087
DATES: 4 January 1985, 26 August 1987, 31 August 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane moist forest
ELEVATION: 550 - 600 m.
ANN. RAINFALL: 1,400 mm *
SOIL DATA: Not available
AREA SAMPLED: 500 m^2
FISHER'S ALPHA: 84.25



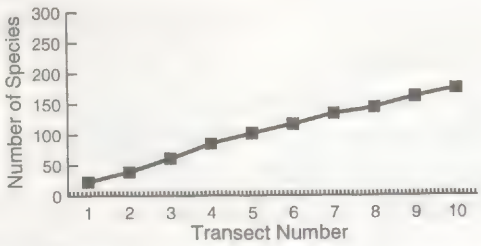
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	74	47	0	121
NUMBER OF INDIVIDUALS	152	118	0	270
NUMBER OF FAMILIES	33	15	0	43
BASAL AREA	2.37	0.15	0	2.53 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 22	Bignoniaceae 68	*Arrabidaea triplinervia* - 15
Fabaceae 12	Sapindaceae 25	*Actinostemon klotzschii* - 15
Myrtaceae 11	Euphorbiaceae 22	*Tynanthus fasciculatus* - 12
Meliaceae 6	Fabaceae 20	*Galipea jasminiflora* - 10
Sapindaceae 5	Meliaceae 16	*Diatenopteryx sorbifolia* - 10
Euphorbiaceae 5	Rutaceae 15	*Aspidosperma polyneuron* - 9
Apocynaceae 4	Myrtaceae 13	*Thinonia scandens* - 6
Celastraceae 4	Apocynaceae 12	*Trichilia catigua* - 6
Lauraceae 4	Celastraceae 7	*Stizophyllum perforatum* - 6
Rubiaceae 4	4 families with 5	3 species with 5

SITE NO. 80: Carajas (carajas)
LOCALITY: Brazil. Pará: Reserva Biologica da Serra dos Carajas, Companhia Vale do Rio Doce.
COORDINATES: 05°30' S, ca. 51°00' W
COLLECTORS: G. dos Santos, A. Gentry, R. Ortiz
VOUCHERS: 353 - 562
DATES: 3 - 6 January 1992

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane moist forest
ELEVATION: 620 m
ANN. RAINFALL: 1,850 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 137.73



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	124	51	0	175
NUMBER OF INDIVIDUALS	241	112	0	353
NUMBER OF FAMILIES	39	17	0	50
BASAL AREA	7.40	0.26	0	7.66 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 31	Fabaceae 49	*Tabernaemontana* cf. *sananho* - 21
Bignoniaceae 14	Bignoniaceae 37	*Guadua* sp.1 - 15
Burseraceae 13	Apocynaceae 28	cf. *Protium* sp.12 - 11
Sapotaceae 11	Burseraceae 24	*Adenocalymna* sp.1 - 9
Sapindaceae 8	Annonaceae 18	cf. *Vatairea* sp.1 - 9
Annonaceae 7	Poaceae 15	6 species with 6
Malpighiaceae 6	Sapindaceae 15	
Apocynaceae 6	Sapotaceae 15	
7 families with 4	Malpighiaceae 14	
	4 families with 9	

SITE NO. 81: Carlos Botelho State Park (carlosbo)
LOCALITY: Brazil. São Paulo: Carlos Botelho State Park, Riberão Branco, Km 55 ca. 23 km S of Park headquarters.
COORDINATES: 24°15' S, 46°56' W
COLLECTORS: A. Gentry, A. C. Dias, G. A. Franco
VOUCHERS: 58800 - 59025
DATES: 2 - 4 September 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane wet forest
ELEVATION: 550 - 560 m
ANN. RAINFALL: 3,100 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 76.77

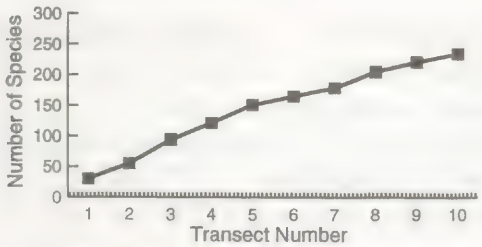
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	123	23	2	148
NUMBER OF INDIVIDUALS	367	76	8	451
NUMBER OF FAMILIES	35	11	2	45
BASAL AREA	3.71	.20	0.054	3.96 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Myrtaceae 32	Myrtaceae 104	*Euterpe edulis* - 20
Fabaceae 11	Rubiaceae 54	*Chrysophyllum* sp.1 - 18
Rubiaceae 9	Arecaceae 28	*Bathysa* sp.1 - 15
Bignoniaceae 7	Fabaceae 28	*Paullinia trigona* - 15
Monimiaceae 6	Bignoniaceae 28	*Psychotria suterella* - 15
Nyctaginaceae 6	Nyctaginaceae 23	*Paragonia pyramidata* - 13
Lauraceae 6	Sapindaceae 23	*Myrcia* sp.2 - 11
4 families with 5	Sapotaceae 23	*Rheedia brasiliensis* - 11
	Monimiaceae 22	*Dalbergia* sp.1 - 10
	2 families with 11	*Mollinedia* sp.2 - 10

SITE NO. 82: Ducke Reserve (ducke)
LOCALITY: Brazil. Amazonas: Ducke Reserve, Km 26 Manaus-Itacoatiara Hwy.
COORDINATES: 03° S, 59°58' W
COLLECTORS: A. Gentry, B. Nelson
VOUCHERS: 69023 - 69312
DATES: 14 - 19 January 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 80 m.
ANN. RAINFALL: ca. 2,200 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 293.76



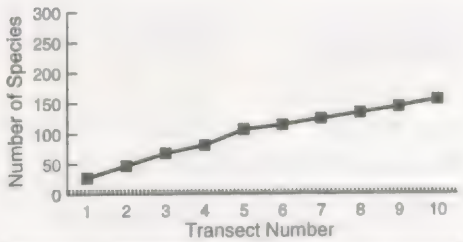
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	203	30	2	235
NUMBER OF INDIVIDUALS	321	37	2	360
NUMBER OF FAMILIES	45	14	2	54
BASAL AREA	4.76	0.052	0.0019	4.81 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 26	Burseraceae 41	*Ryania* sp.1 - 19
Burseraceae 22	Fabaceae 34	*Oenocarpus bacaba* - 8
Sapotaceae 16	Lecythidaceae 28	*Amphirrhox surinamensis* - 8
Lauraceae 14	Arecaceae 27	*Eschweilera apiculata* - 8
Lecythidaceae 13	Flacourtiaceae 23	*Protium aracouchini* - 6
Annonaceae 12	Sapotaceae 18	8 species with 5
Moraceae 10	Annonaceae 17	
Arecaceae 9	Lauraceae 16	
Apocynaceae 7	Moraceae 16	
3 families with 6	Violaceae 14	

SITE NO. 83: Camorin-Jacarepaguá (camorin)
LOCALITY: Brazil. Rio de Janeiro: Jacarepaguá, represa de Camorin.
COORDINATES: 22°56' S, 43°22' W
COLLECTORS: A. Peixoto, A. Gentry, O. Peixoto
VOUCHERS: 3982 - 4183
DATES: 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical moist forest
ELEVATION: 200 m.
ANN. RAINFALL: 1,500 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 104.95



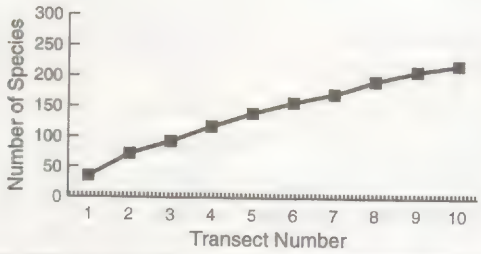
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	120	36	2	158
NUMBER OF INDIVIDUALS	310	56	2	368
NUMBER OF FAMILIES	38	15	1	48
BASAL AREA	4.91	0.13	0.001	5.04 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 17	Rubiaceae 51	*Senefeldera multiflora* - 19
Myrtaceae 15	Euphorbiaceae 35	*Sorocea guilleminiana* - 18
Rubiaceae 12	Moraceae 34	*Bathysa* cf. *gymnocarpa* - 16
Sapindaceae 9	Fabaceae 33	Melastomataceae gen. 1 sp.1 - 14
Celastraceae 8	Myrtaceae 24	*Psychotria angulosa* - 12
Moraceae 8	Melastomataceae 17	*Swartzia* sp.1 - 10
Apocynaceae 7	Apocynaceae 15	Euphorbiaceae gen. 1 sp.1 - 8
4 families with 6	Lauraceae 15	*Clusia* sp.1 - 7
	Celastraceae 14	Nyctaginaceae gen. 2 sp.1 - 7
	Sapotaceae 12	*Naucleopsis mello-barretoi* - 6

SITE NO. 84: Linhares (linhares)
LOCALITY: Brazil. Espírito Santo: Linhares, Reserva Florestal de CVRD.
COORDINATES: 19°18' S, 40°04' W
COLLECTORS: A. Peixoto, A. Gentry, E. Zardini, C. Proença, O. Peixoto
VOUCHERS: 3068 - 3394
DATES: 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical moist forest
ELEVATION: 30 - 60 m
ANN. RAINFALL: 1,400 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 178.10



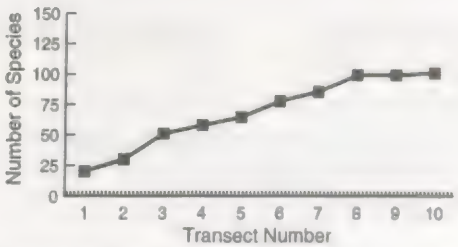
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	167	52	0	219
NUMBER OF INDIVIDUALS	345	86	0	431
NUMBER OF FAMILIES	44	18	0	53
BASAL AREA	5.24	0.37	0	5.60 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 32	Myrtaceae 79	*Bixa arborea* - 16
Myrtaceae 31	Fabaceae 53	*Amphirrox* sp.1 - 16
Sapotaceae 14	Sapotaceae 24	Myrtaceae gen. 3 sp.1 - 11
Bignoniaceae 11	Violaceae 20	*Combretum laxum* - 8
Celastraceae 9	Lauraceae 19	*Ocotea martiana* - 7
Lauraceae 9	Bixaceae 16	Myrtaceae gen.7 sp.1 - 6
Euphorbiaceae 8	Bignoniaceae 15	9 species with 5
Nyctaginaceae 6	Celastraceae 15	
Annonaceae 6	Euphorbiaceae 14	
Apocynaceae 6	Bombacaceae 13	

SITE NO. 85: Manaus (manaus)
LOCALITY: Brazil. Amazonas: Left bank Rio Negro, 12 m above Amazon, secondary forest on INPA campus.
COORDINATES: 03°08' S, 60°01' W
COLLECTORS: A. Gentry
VOUCHERS: 13177 - 13284
DATES: 11 - 13 December 1974

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 85 m
ANN. RAINFALL: ca. 2,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 52.22



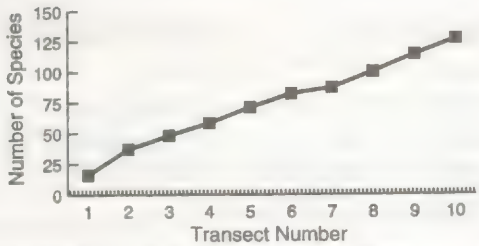
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	84	18	0	102
NUMBER OF INDIVIDUALS	289	27	0	316
NUMBER OF FAMILIES	28	9	0	34
BASAL AREA	0.96	0.019	0	0.98 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 18	Euphorbiaceae 86	*Tetrorchidium* sp.1 - 53
Euphorbiaceae 7	Fabaceae 34	*Casearia macrantha* - 18
Melastomataceae 6	Flacourtiaceae 24	*Alchornea schomburgkii* - 15
Arecaceae 5	Melastomataceae 24	*Miconia myriantha* - 11
Bignoniaceae 5	Clusiaceae 18	*Myrcia fallax* - 11
Myrtaceae 5	Arecaceae 17	*Croton matourensis* - 9
Connaraceae 4	Myrtaceae 17	*Vismia guianensis* - 8
Meliaceae 4	Nyctaginaceae 10	*Vismia baccifera* - 8
8 families with 3	Connaraceae 9	*Neea* sp.1 - 7
	2 families with 8	*Blakea* sp.1 - 7

SITE NO. 86: Belém-Mocambo (belem)
LOCALITY: Brazil. Pará: Mocambo, Embrapa Forest Reserve, ca. 10 km from Belém.
COORDINATES: 01°30' S, 47°59' W
COLLECTORS: A. Gentry
VOUCHERS: 48944 - 49133
DATES: 13 - 16 November 1984

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 20 m
ANN. RAINFALL: 2,760 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 82.44



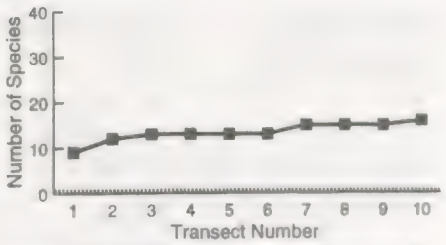
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	101	25	2	128
NUMBER OF INDIVIDUALS	257	48	2	307
NUMBER OF FAMILIES	33	10	2	42
BASAL AREA	4.14	0.12	0.004	4.26 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 20	Fabaceae 44	*Eschweilera coriacea* - 23
Burseraceae 8	Lecythidaceae 37	*Lecythis idatimon* - 13
Bignoniaceae 7	Burseraceae 34	*Vochysia guianensis* - 10
Chrysobalanaceae 7	Annonaceae 16	*Moutabea* sp.1 - 9
Sapotaceae 6	Arecaceae 14	*Tovomita* sp.1 - 8
Lauraceae 6	Bignoniaceae 14	*Socratea exorrhiza* - 8
Arecaceae 4	Clusiaceae 13	*Protium trifoliatum* - 8
Annonaceae 4	Vochysiaceae 12	*Protium decandrum* - 8
Clusiaceae 4	Icacinaceae 11	*Vouacapoa americana* - 8
Myrtaceae 4	4 families with 10	3 species with 7

SITE NO. 87: Alto de Mirador (mirador)
LOCALITY: Chile. Valdivia: Altos del Mirador, 50 km W of La Unión, near headquarters of Parque Nacional Los Alerzales.
COORDINATES: 40°14' S, 73°18' W
COLLECTORS: A. Gentry, C. Ramirez, E. Berger, J. Barrera
VOUCHERS: 53488 - 53500
DATES: 18 March 1986

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate montane rain forest
ELEVATION: 800 m.
ANN. RAINFALL: 4,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 3.50



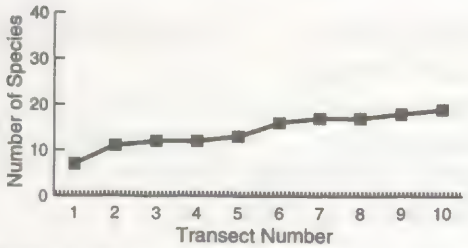
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	14	2	0	16
NUMBER OF INDIVIDUALS	323	11	0	334
NUMBER OF FAMILIES	11	2	0	13
BASAL AREA	8.70	0.0074	0	8.71 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 2	Myrtaceae 84	*Myrceugenia chrysocarpa* - 78
Myrtaceae 2	Fagaceae 57	*Fitzroya cupressoides* - 43
Podocarpaceae 2	Cupressaceae 43	*Nothofagus nitida* - 39
	Podocarpaceae 40	*Drimys winteri* - 27
	Winteraceae 27	*Saxigothea conspicua* - 26
	Ericaceae 24	*Gaultheria phyllarifolia* - 24
	Loganiaceae 22	*Desfontainia spinosa* - 22
	Thymelaeaceae 18	*Ovidia pillopillo* - 18
	Bignoniaceae 8	*Nothofagus betuloides* - 18
	Grossulariaceae 4	*Podocarpus nubigera* - 14

SITE NO. 88: Bosque de San Martín (martin)
LOCALITY: Chile. Valdivia: Bosque de San Martín, 38 km SW of San José de la Mariquina.
COORDINATES: 39°30' S, 73°10' W
COLLECTORS: A. Gentry, C. Ramirez, D. Contreras, E. Berger
VOUCHERS: 53436 - 53451
DATES: 15 March 1986

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate wet forest
ELEVATION: 30 m
ANN. RAINFALL: 2,316 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 4.63



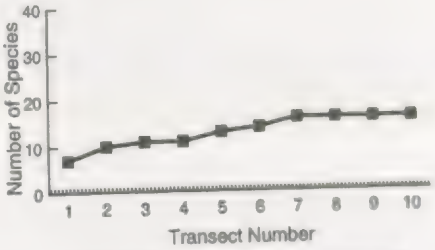
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	16	3	0	19
NUMBER OF INDIVIDUALS	248	28	0	276
NUMBER OF FAMILIES	11	3	0	14
BASAL AREA	13.19	0.037	0	13.22 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Myrtaceae 5	Myrtaceae 98	*Amomyrtus luma* - 84
Proteaceae 2	Aextoxicaceae 50	*Aextoxicon punctatum* - 50
	Podocarpaceae 28	*Podocarpus saligna* - 28
	Monimiaceae 20	*Laurelia sempervirens* - 20
	Fagaceae 19	*Nothofagus obliqua* - 19
	Poaceae 18	*Chusquea quila* - 18
	Proteaceae 14	*Eucryphia cordifolia* - 9
	Eucryphiaceae 9	*Lomatia dentata* - 9
	Vitaceae 8	*Cissus striata* - 8
	Verbenaceae 6	*Amomyrtus meli* - 7

SITE NO. 89: Puyehue (puyehue)
LOCALITY: Chile. Osorno: Aguascalientes, Parque Nacional Puyehue.
COORDINATES: 40°43' S, 72°18' W
COLLECTORS: A. Gentry, C. Ramirez, D. Contreras
VOUCHERS: 53461 - 53466
DATES: 16 March 1986

ECOLOGICAL AND FLORISTIC DATA

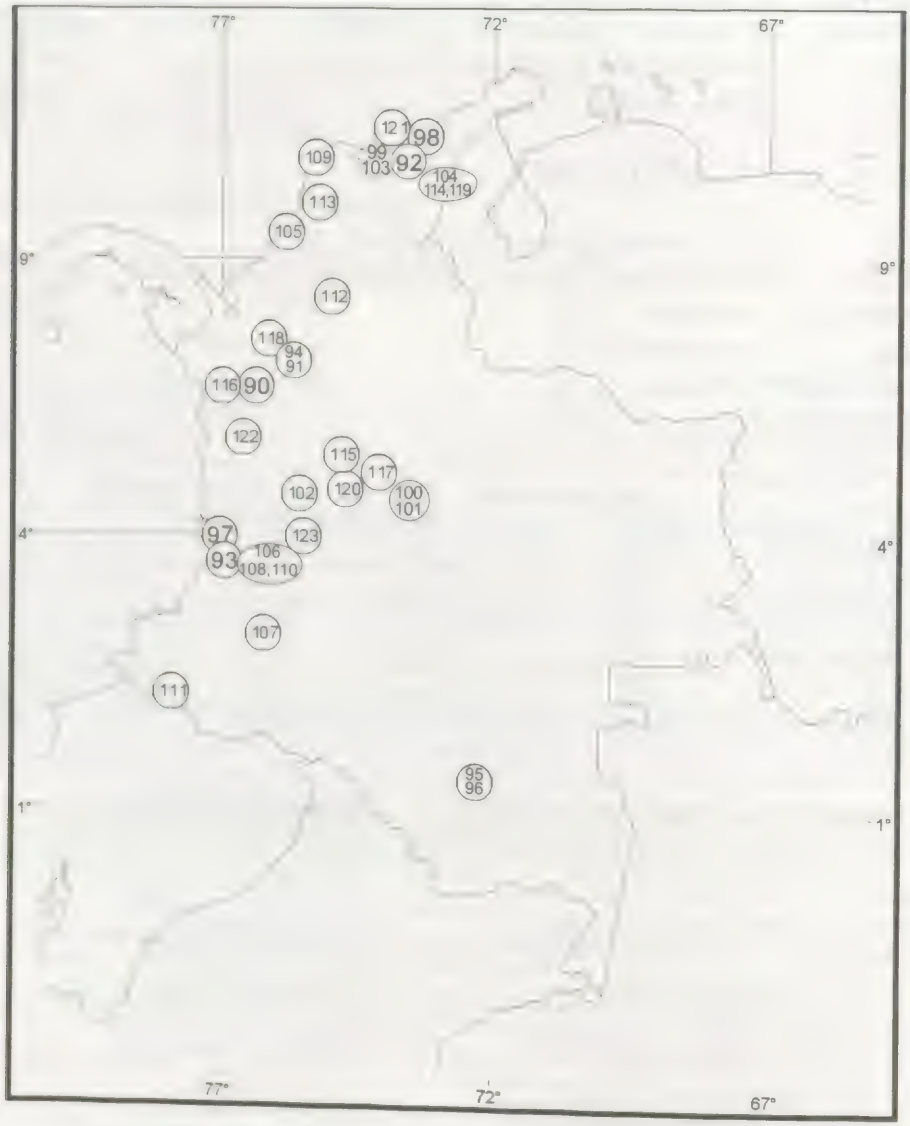
LIFE ZONE: Warm temperate montane rain forest
ELEVATION: 460 - 520 m
ANN. RAINFALL: 3,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 3.50



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	13	3	0	16
NUMBER OF INDIVIDUALS	270	66	0	336
NUMBER OF FAMILIES	10	3	0	13
BASAL AREA	24.40	0.41	0	24.81 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Myrtaceae 3	Myrtaceae 199	*Myrceugenia planipes* - 177
Cunoniaceae 2	Hydrangeaceae 59	*Hydrangea integerrima* - 59
	Monimiaceae 35	*Laurelia philippiana* - 35
	Asteraceae 9	*Luma apiculata* - 11
	Eucryphiaceae 7	*Amomyrtus luma* - 11
	Gesneriaceae 6	*Dasyphyllum diacanthoides* - 9
	Onagraceae 6	*Eucryphia cordifolia* - 7
	Cunoniaceae 5	*Fuchsia magellanica* - 6
	Verbenaceae 4	*Mitraria coccinea* - 6
	Flacourtiaceae 3	*Rhaphithamnus spinosus* - 4

3B. Colombia, sites 90–123.

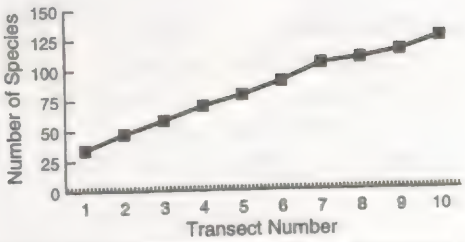


90 – Alto de Cuevas, Colombia
91 – Alto de Sapa, Colombia
92 – Alto de Mirador, Colombia
93 – Anchicayá, Colombia
94 – Antado, Colombia
95 – Araracuara, High Campina, Colombia
96 – Araracuara, Colombia
97 – Bajo Calima, Colombia
98 – Bosque de la Cueva, Colombia
99 – Campano, Colombia
100 – Carpanta Siete Cuerales, Colombia
101 – Carpanta, Colombia
102 – Cedral, Colombia
103 – Cerro Kennedy, Colombia
104 – Cerro Espejo, Colombia
105 – Colosó 1, Colombia
106 – Farallones de Cali, Colombia
107 – Finca Mehrenberg, Colombia
108 – Finca Zingara, Colombia
109 – Galerazamba, Colombia
110 – Hacienda Himalaya, Colombia
111 – La Planada, Colombia
112 – La Raya, Colombia
113 – Loma de los Colorados, Colombia
114 – Manaure, Colombia
115 – Mariquita, Colombia
116 – Murrí, Colombia
117 – Neusa, Colombia
118 – Río Manso, Colombia
119 – Sabana Rubia, Colombia
120 – Lomas de Santo Tomás, Colombia
121 – Tayrona National Park, Colombia
122 – Tutunendo, Colombia
123 – Ucumarí, Colombia

SITE NO. 90: Alto de Cuevas (cuevas)
LOCALITY: Colombia. Antioquia: Alto de Cuevas, 10 km E of La Blanquita, 12 km W of Nutibara.
COORDINATES: 06°40' N, 76°30' W
COLLECTORS: A. Gentry, C. Barbosa, D. Cárdenas
VOUCHERS: 75976 - 76139
DATES: 2 - 4 March 1992

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane rain forest
ELEVATION: 1,670 m
ANN. RAINFALL: 4,000 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 70.25



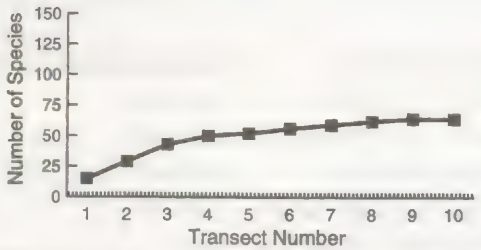
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	90	37	0	127
NUMBER OF INDIVIDUALS	277	81	0	358
NUMBER OF FAMILIES	41	22	0	50
BASAL AREA	4.74	0.42	0	5.16 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 14	Arecaceae 97	*Wettinia castanea* - 49
Araceae 8	Rubiaceae 24	*Socratea* sp.1 - 26
Arecaceae 6	Araceae 23	*Otoba novogranatensis* - 18
Melastomataceae 6	Myristicaceae 18	*Chamaedorea polyclada* - 12
Cyatheaceae 6	Melastomataceae 12	*Quararibea* sp.2 - 9
Lauraceae 6	Euphorbiaceae 11	*Renealmia* sp.1 - 8
Euphorbiaceae 5	Bombacaceae 10	*Geonoma* sp.1 - 7
Piperaceae 5	Cyatheaceae 10	*Chusquea* sp.1 - 7
Moraceae 4	Piperaceae 10	*Pentagonia costaricensis* - 7
6 families with 3	2 families with 9	*Sapium* sp.1 - 6

SITE NO. 91: Alto de Sapa (altosapa)
LOCALITY: Colombia. Antioquia: Alto de Sapa, NW of Vega del Inglés, Paramillo National Park.
COORDINATES: 07°10' N ,75°54' W
COLLECTORS: A. Gentry, H. Cuadros
VOUCHERS: 79059 - 79142
DATES: 6 - 7 March 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical montane rain forest
ELEVATION: 2,660 m
ANN. RAINFALL: 4,500 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 21.74



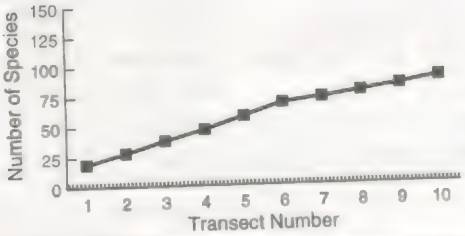
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	50	14	0	64
NUMBER OF INDIVIDUALS	328	63	0	391
NUMBER OF FAMILIES	23	9	0	28
BASAL AREA	5.86	0.087	0	5.95 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Melastomataceae 10	Cyatheaceae 84	*Cyathea* sp.3 - 63
Cyathaceae 5	Melastomataceae 72	*Piper* sp.1 - 24
Lauraceae 5	Rubiaceae 30	*Quercus humboldtii* - 18
Rubiaceae 5	Piperaceae 25	Ericaceae gen. 1 sp.1 - 17
Asteraceae 4	Ericaceae 24	*Miconia* sp.2 - 16
Clusiaceae 4	Araliaceae 20	*Cyathea* sp.2 - 15
Aquifoliaceae 3	Fagaceae 18	*Miconia* sp.3 - 14
Ericaceae 3	Clusiaceae 14	*Myrsine* sp.1 - 13
Theaceae 3	Myrsinaceae 13	*Schefflera* sp.1 - 13
3 families with 2	Asteraceae 11	*Palicourea* sp.1 - 11

SITE NO. 92: Alto de Mirador (altodem)
LOCALITY: Colombia. Magdalena: Alto de Mirador, Sierra Nevada de Santa Marta.
COORDINATES: 10°55' N, 73°50' W
COLLECTORS: A. Gentry, C. Sáenz
VOUCHERS: 76200 - 76301
DATES: 10 - 12 March 1992

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane wet forest
ELEVATION: 1,180 m
ANN. RAINFALL: 2,500 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 40.86



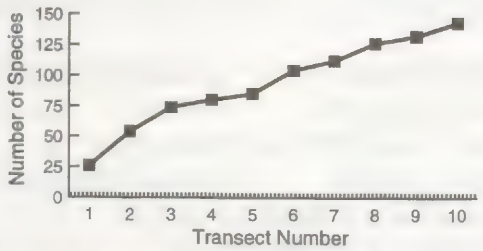
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	65	10	14	89
NUMBER OF INDIVIDUALS	260	14	46	320
NUMBER OF FAMILIES	30	9	10	42
BASAL AREA	4.79	0.023	0.43	5.23 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Melastomataceae 9	Cyatheaceae 97	*Cyathea* sp.3 - 39
Cyatheaceae 9	Arecaceae 34	*Cyathea* sp.1 - 20
Arecaceae 8	Melastomataceae 28	*Cyathea* sp.2 - 18
Fabaceae 5	Rubiaceae 22	*Rhodospatha* sp.1 - 15
Rubiaceae 5	Araceae 19	*Henriettella* sp.1 - 14
Clusiaceae 4	Icacinaceae 13	*Euterpe* sp.1 - 13
Lauraceae 4	Clusiaceae 13	*Calatola* sp.1 - 13
Ericaceae 3	Fabaceae 8	*Psychotria* sp.1 - 12
8 families with 2	Aspleniaceae 8	*Dictyocaryum* sp.1 - 12
	Piperaceae 7	*Piper* sp.1 - 6

SITE NO. 93: Anchicayá (anchicay)
LOCALITY: Colombia.Valle: Bajo Anchicayá, Levantamiento.
COORDINATES: 03°45' N, 76°50' W
COLLECTORS: A. Gentry, O. Rangel, and graduate botanical course
VOUCHERS: 68393 - 68610A
DATES: 19 October 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 300 m
ANN. RAINFALL: 3,100 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 77.66



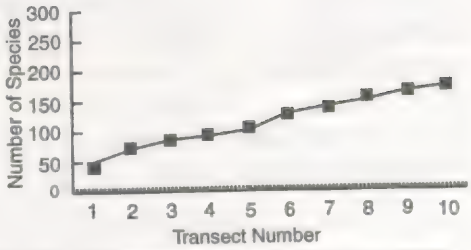
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	111	32	0	143
NUMBER OF INDIVIDUALS	353	59	0	412
NUMBER OF FAMILIES	33	19	0	46
BASAL AREA	4.71	0.048	0	4.75 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Melastomataceae 19	Arecaceae 64	*Wettinia* sp.1 - 53
Araceae 11	Melastomataceae 55	*Quararibea* sp.1 - 22
Rubiaceae 9	Bombacaceae 29	*Miconia* sp.3 - 19
Arecaceae 8	Rubiaceae 24	*Croton* sp.1 - 10
Fabaceae 8	Myristicaceae 23	*Virola sebifera* - 9
Moraceae 7	Araceae 21	*Tetracera* sp.1 - 9
Burseraceae 6	Burseraceae 21	*Cyathea* sp.1 - 9
Lauraceae 6	Moraceae 17	6 species with 7
Myristicaceae 6	Fabaceae 14	
Bombacaceae 5	Celastraceae 13	

SITE NO. 94: Antado (antado)
LOCALITY: Colombia. Antioquia: Antado, Valley of Río San Jorge, Paramillo National Park.
COORDINATES: 07°15' N, 75°55' W
COLLECTORS: A. Gentry, H. Cuadros, A. Cogollo
VOUCHERS: 78822 - 79045
DATES: 1 - 4 March 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane rain forest
ELEVATION: 1,560 m
ANN. RAINFALL: 4,500 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 108.62



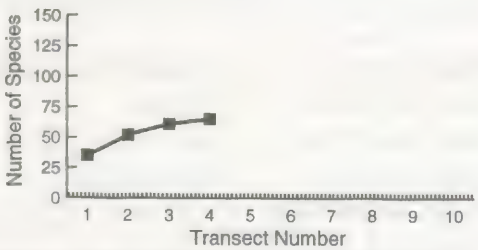
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	113	50	1	164
NUMBER OF INDIVIDUALS	290	91	2	383
NUMBER OF FAMILIES	40	23	1	58
BASAL AREA	4.61	0.90	0.0014	5.52 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Melastomataceae 16	Rubiaceae 32	*Metteniusa* sp.1 - 22
Rubiaceae 12	Icacinaceae 31	*Hyeronima* sp.1 - 13
Lauraceae 10	Melastomataceae 24	*Otoba novogranatensis* - 12
Clusiaceae 9	Sapotaceae 21	*Pouteria* sp.1 - 12
Fabaceae 7	Euphorbiaceae 20	*Calatola* sp.1 - 9
Cyatheaceae 7	Lauraceae 20	*Geonoma* sp.1 - 8
Moraceae 7	Fabaceae 19	*Macrolobium* sp.1 - 8
Araceae 6	Araceae 18	*Guettarda* sp.1 - 7
Sapotaceae 5	Myristicaceae 17	4 species with 6
3 families with 4	Clusiaceae 16	

SITE NO. 95: Araracuara, high campina (arcating)
LOCALITY: Colombia. Caquetá: Araracuara, near airfield.
COORDINATES: 00°25' S, 72°19' W
COLLECTORS: A. Gentry, M. Sánchez
VOUCHERS: 65230 - 65288
DATES: 27 January 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 250 m
ANN. RAINFALL: 3,500 mm *
SOIL DATA: White sand soil
AREA SAMPLED: 400 m²
FISHER'S ALPHA: 26.14



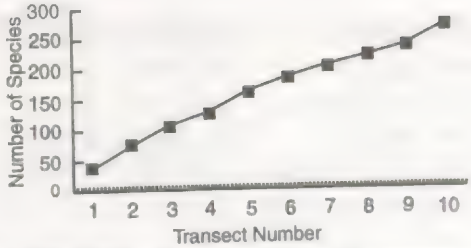
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	64	1	0	65
NUMBER OF INDIVIDUALS	287	1	0	288
NUMBER OF FAMILIES	25	1	0	26
BASAL AREA	1.52	0.0005	0	1.52 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Sapotaceae 7	Apocynaceae 41	Apocynaceae gen.1 sp.1 - 22
Chrysobalanaceae 6	Sapotaceae 39	*Euterpe* sp.1 - 15
Clusiaceae 6	Clusiaceae 32	Sapotaceae gen.4 sp.1 - 14
Fabaceae 5	Arecaceae 22	*Neocouma ternstroemiacea* - 12
Lauraceae 5	Chrysobalanaceae 17	Humiriaceae gen.1 sp.1 - 11
Euphorbiaceae 4	Euphorbiaceae 17	Sapotaceae gen.2 sp.1 - 10
Apocynaceae 3	Humiriaceae 16	*Ouratea* sp.1 - 9
Arecaceae 3	Fabaceae 14	*Clusia* sp.1 - 9
Rubiaceae 3	Rubiaceae 14	3 species with 8
6 families with 2	2 families with 9	

SITE NO. 96: Araracuara (araracua)
LOCALITY: Colombia. Caquetá: Araracuara, trail to Yaré, forest inventory plots.
COORDINATES: 00°25' S, 72°20' W
COLLECTORS: A. Gentry, M. Sánchez
VOUCHERS: 64814 - 65151
DATES: 21 - 25 January 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 200 m
ANN. RAINFALL: 3,250 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 264.81



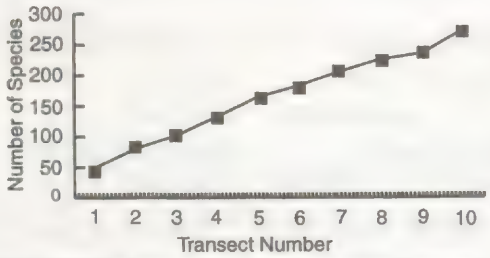
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	217	50	0	267
NUMBER OF INDIVIDUALS	376	85	0	461
NUMBER OF FAMILIES	48	20	0	55
BASAL AREA	4.83	0.23	0	5.06 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 37	Fabaceae 95	*Clathotropis* sp.1 - 35
Burseraceae 15	Arecaceae 29	*Ampelozizyphus* sp.1 - 14
Annonaceae 13	Chrysobalanaceae 22	*Astrocaryum* sp.1 - 14
Lecythidaceae 13	Burseraceae 20	*Rinorea* sp.1 - 13
Lauraceae 12	Annonaceae 20	*Oenocarpus bataua* - 11
Chrysobalanaceae 10	Lecythidaceae 19	*Hirtella* sp.1 - 8
Meliaceae 9	Rhamnaceae 17	*Clathrotropis* sp.2 - 6
Euphorbiaceae 8	Lauraceae 15	*Nealchornea* sp.1 - 5
Moraceae 8	Euphorbiaceae 14	Fabaceae gen. 4 sp.1 - 5
Myrtaceae 8	2 families with 13	2 species with 4

SITE NO. 97: Bajo Calima (calima)
LOCALITY: Colombia. Valle: Bajo Calima, ca. 15 km N of Buenaventura, Carton de Colombia concession.
COORDINATES: 03°55' N, 77°00' W
COLLECTORS: A. Gentry, A. Juncosa, H. Mazuera
VOUCHERS: 35357 - 35633, 40207 - 40332
DATES: 6 - 13 December 1981, 14 - 15 February 1983

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical wet forest
ELEVATION: 50 - 150 m
ANN. RAINFALL: 7,470 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 218.47



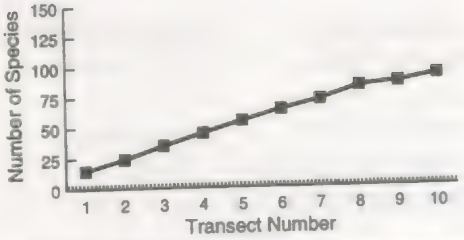
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	212	30	19	261
NUMBER OF INDIVIDUALS	443	37	23	503
NUMBER OF FAMILIES	45	17	8	59
BASAL AREA	3.29	0.041	0.016	3.35 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 22	Rubiaceae 66	*Mabea occidentalis* - 18
Arecaceae 19	Arecaceae 56	*Faramea jefensis* - 15
Fabaceae 17	Euphorbiaceae 36	*Phytelephas* sp.2 - 12
Melastomataceae 17	Melastomataceae 34	*Faramea salicifolia* - 11
Annonaceae 15	Sapotaceae 31	*Faramea insignis* - 9
Clusiaceae 15	Clusiaceae 27	*Ecclinusa ramiflora* - 8
Sapotaceae 10	Fabaceae 25	*Socratea* sp.1 - 7
Lauraceae 10	Annonaceae 25	8 species with 6
Lecythidaceae 10	Lecythidaceae 19	
Myristicaceae 9	Myristicaceae 16	

SITE NO. 98: Bosque de la Cueva (cueva)
LOCALITY: Colombia. Guajira: Bosque de la Cueva, 15 km S of Mingueo on trail to Pueblo Viejo.
COORDINATES: 11°05' N, 73°28' W
COLLECTORS: A. Gentry, H. Cuadros
VOUCHERS: 55371 - 55461
DATES: 21 -22 August 1986

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane moist forest
ELEVATION: 350 m
ANN. RAINFALL: 2,000 mm
SOIL DATA: Rich soil over rocks
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 45.99



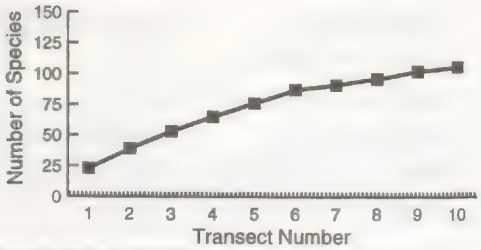
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	68	21	3	92
NUMBER OF INDIVIDUALS	231	57	6	294
NUMBER OF FAMILIES	32	10	2	37
BASAL AREA	4.09	0.13	0.034	4.26 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 9	Bignoniaceae 84	*Memora aspericarpa* - 46
Fabaceae 7	Fabaceae 36	*Pithecellobium latifolium* - 22
Arecaceae 6	Lauraceae 23	*Piper reticulatum* - 16
Euphorbiaceae 6	Piperaceae 18	*Virola sebifera* - 16
Lauraceae 6	Myristicaceae 16	*Arrabidaea verrucosa* - 15
Moraceae 6	Moraceae 13	*Endlicheria* sp.1 - 9
Rubiaceae 5	Arecaceae 12	*Phryganocydia corymbosa* - 7
4 families with 3	Euphorbiaceae 9	*Cecropia peltata* - 6
	Rubiaceae 9	*Ocotea* sp.1 - 6
	2 families with 7	*Attalea* sp.1 - 6

SITE NO. 99: Campano (campano)
LOCALITY: Colombia. Magdalena: Campano, Sierra Nevada de Santa Marta, above Minca.
COORDINATES: 11°08' N, 74°01' W
COLLECTORS: A. Gentry, H. Cuadros, R. Ortiz
VOUCHERS: 64722 - 64779, 79748 - 79850
DATES: 16 January 1989, 10 - 11 June 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane moist forest
ELEVATION: 1,680-1,690 m
ANN. RAINFALL: 1,250 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 47.45



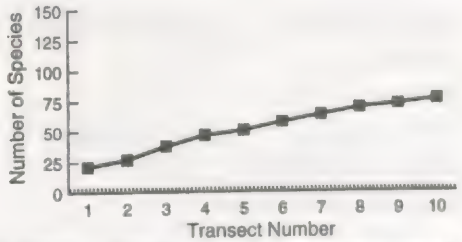
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	82	16	9	107
NUMBER OF INDIVIDUALS	324	70	11	405
NUMBER OF FAMILIES	36	12	5	44
BASAL AREA	7.00	0.12	0.14	7.26 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 14	Rubiaceae 89	*Henriettella trachyphylla* - 22
Moraceae 13	Melastomataceae 45	cf. *Merriania* sp.1 - 19
Lauraceae 8	Lauraceae 23	*Elaeagia myriantha* - 19
Fabaceae 6	Moraceae 21	*Rudgea* sp.1 - 14
Melastomataceae 4	Malpighiaceae 18	cf. *Coussarea* sp.1 - 13
Clusiaceae 4	Elaeocarpaceae 17	*Solanum* sp.1 - 12
5 families with 3	Apocynaceae 16	*Gloeospermum* sp.1 - 12
	Fabaceae 15	Malpighiaceae gen.1 sp.1 - 11
	Solanaceae 13	3 species with 10
	2 families with 12	

SITE NO. 100: Carpanta Siete Cuerales (sietecue)
LOCALITY: Colombia. Cundinamarca: Carpanta, sector Siete Cuerales, 20 km due S of Junín.
COORDINATES: 04°35' N, 73°40' W
COLLECTORS: A. Gentry, A. Repizzo, C. Solano
VOUCHERS: 71737 - 71830
DATES: 15 - 16 December 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane wet forest
ELEVATION: 2,350 m
ANN. RAINFALL: ca. 3,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 30.52



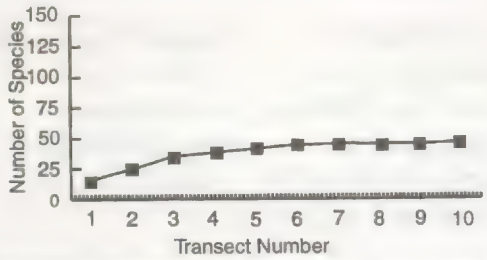
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	61	16	0	77
NUMBER OF INDIVIDUALS	317	33	0	350
NUMBER OF FAMILIES	29	10	0	35
BASAL AREA	3.56	0.024	0	3.58 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 8	Rubiaceae 115	*Faramea* sp.2 - 41
Rubiaceae 8	Chloranthaceae 34	*Palicourea* sp.1 - 36
Asteraceae 7	Brunelliaceae 20	*Hedyosmum* sp.1 - 34
Myrsinaceae 5	Clusiaceae 19	*Faramea* sp.1 - 25
Cyatheaceae 4	Lauraceae 18	*Brunellia colombiana* - 20
Melastomataceae 4	Asteraceae 13	*Clusia* sp.1 - 15
Clusiaceae 3	Cunoniaceae 12	*Weinmannia* sp.1 - 10
Ericaceae 3	Euphorbiaceae 12	*Rhamnus* sp.1 - 9
Euphorbiaceae 3	Melastomataceae 12	*Billia colombiana* - 9
Symplocaceae 3	Cyatheaceae 11	2 species with 8

SITE NO. 101: Carpanta (carpanta)
LOCALITY: Colombia. Cundinamarca: Reserva Carpanta, section Dunning, below Parque Nacional Chingaza, 30 km due S of Junín.
COORDINATES: 04°35' N, 73°40' W
COLLECTORS: A. Gentry, A. Repizzo, C. Solano
VOUCHERS: 71677 - 71737
DATES: 13 - 14 December 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical montane rain forest
ELEVATION: 2,900 m
ANN. RAINFALL: 3,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 15.71



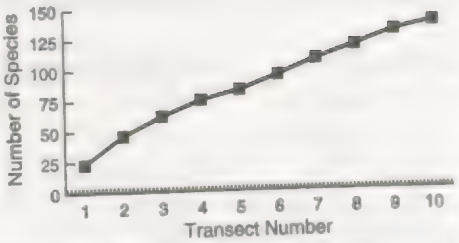
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	34	12	0	46
NUMBER OF INDIVIDUALS	212	66	0	278
NUMBER OF FAMILIES	17	7	0	22
BASAL AREA	4.45	0.096	0	4.55 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Cyatheaceae 6	Poaceae 42	*Chusquea* sp.1 - 41
Myrsinaceae 5	Cunoniaceae 30	*Geonoma weberbaueri* - 26
Clusiaceae 4	Arecaceae 26	*Weinmannia* cf. *balbisiana* - 20
Aquifoliaceae 3	Chloranthaceae 26	*Hedyosmum* sp.2 - 16
Chloranthaceae 3	Myrsinaceae 25	*Schefflera bogotensis* - 14
Ericaceae 3	Clusiaceae 23	*Miconia* sp.1 - 14
Melastomataceae 3	Melastomataceae 18	*Ardisia* sp.1 - 12
4 families with 2	Araliaceae 14	*Weinmannia rollottii* - 10
	Aquifoliaceae 14	*Ocotea sericea* - 9
	Cyatheaceae 10	5 species with 7

SITE NO. 102: Cedral (cedral)
LOCALITY: Colombia. Risaralda: Cedral.
COORDINATES: 04°45' N, 75°33' W
COLLECTORS: O. Rangel, A. Gentry
VOUCHERS: 564 - 933
DATES: 15 October 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane wet forest
ELEVATION: 2,140 m
ANN. RAINFALL: 3,000 mm *
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 59.26



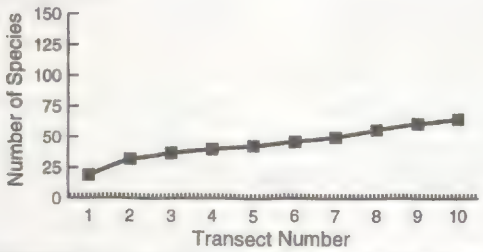
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	107	19	12	138
NUMBER OF INDIVIDUALS	481	46	22	549
NUMBER OF FAMILIES	37	13	3	46
BASAL AREA	5.36	0.051	0. 97	6.38 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 15	Arecaceae 163	*Chamaedorea* sp.1 - 142
Melastomataceae 14	Araceae 35	*Oreopanax* sp.1 - 29
Araceae 11	Araliaceae 33	*Saurauia* sp.1 - 21
Asteraceae 7	Melastomataceae 28	*Xanthosoma* sp.1 - 15
Arecaceae 6	Clusiaceae 27	*Barnadesia* sp.1 - 14
Solanaceae 6	Lauraceae 24	*Catoblastus* sp.1 - 13
Clusiaceae 6	Asteraceae 23	*Hedyosmum* sp.1 - 11
Moraceae 6	Rubiaceae 22	*Tovomita* sp.1 - 10
Piperaceae 6	Actinidiaceae 21	*Palicourea* sp.1 - 10
Rubiaceae 6	2 families with 17	*Piper* cf. *imperialis* - 9

SITE 103: Cerro Kennedy (kennedy)
LOCALITY: Colombia. Magdalena: Cerro Kennedy, near top of highest peak in north massif of Sierra Nevada de Santa Marta.
COORDINATES: 11°05' N, 74°01' W
COLLECTORS: A. Gentry, H. Cuadros
VOUCHERS: 55533 - 55582, 64662 - 64717
DATES: 23 - 24 August 1986, 14 January 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical montane wet forest
ELEVATION: 2,600 m
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 26.04



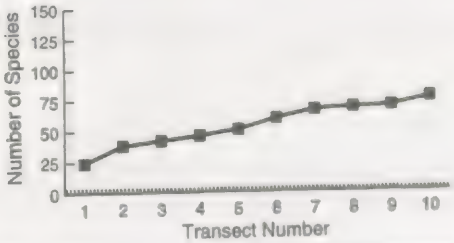
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	57	8	0	65
NUMBER OF INDIVIDUALS	256	34	0	290
NUMBER OF FAMILIES	28	7	0	33
BASAL AREA	4.95	0.034	0	4.99 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 9	Arecaceae 50	*Geonoma* sp.1 - 32
Aquifoliaceae 5	Melastomataceae 33	*Miconia tinifolia* - 27
Myrtaceae 4	Poaceae 21	*Chusquea* sp.1 - 21
Melastomataceae 3	Aquifoliaceae 19	*Ceroxylon schultzei* - 18
Polygalaceae 3	Lauraceae 16	*Myrsine coriacea* - 13
Symplocaceae 3	Araliaceae 14	*Schefflera* sp.1 - 13
11 families with 2	Myrsinaceae 14	*Brunellia* sp.1 - 9
	Chloranthaceae 11	*Hedyosmum racemosum* - 8
	Myrtaceae 11	*Croton* sp.1 - 7
	Theaceae 11	3 species with 6

SITE NO. 104: Cerro Espejo (cerroesp)
LOCALITY: Colombia. Guajira: North slope of Cerro del Espejo, Serrania de Perijá, border with César.
COORDINATES: 10°28' N, 72°50' W
COLLECTORS: A. Gentry, H. Cuadros
VOUCHERS: 57151 - 57246
DATES: 28 - 30 April 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical montane wet forest
ELEVATION: 2,550 - 2,570 m
ANN. RAINFALL: 1,750 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 30.08



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	61	16	0	77
NUMBER OF INDIVIDUALS	310	49	0	359
NUMBER OF FAMILIES	37	11	0	46
BASAL AREA	8.23	0.036	0	8.27 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 10	Myrsinaceae 35	*Styloceras laurifolium* - 33
Asteraceae 8	Buxaceae 33	*Ruagea glabra* - 30
Myrtaceae 4	Meliaceae 33	*Myrsine* sp.1 - 28
Myrsinaceae 3	Lauraceae 28	*Chusquea* sp.1 - 20
Proteaceae 3	Poaceae 20	*Cissus* sp.1 - 13
8 families with 2	Araliaceae 17	*Miconia* sp.1 - 11
	Icacinaceae 17	*Oreopanax* sp.2 - 11
	Asteraceae 14	*Viburnum triphyllum* - 11
	4 families with 13	3 species with 9

SITE NO. 105: Colosó 1 (colosoi)
LOCALITY: Colombia. Sucre: Colosó, primate research station, forest on limestone.
COORDINATES: 09°30' N, 75°48' W
COLLECTORS: A. Gentry, H. Cuadros
VOUCHERS: 68106 - 68242
DATES: 25 - 26 October 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 300 m
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 60.04

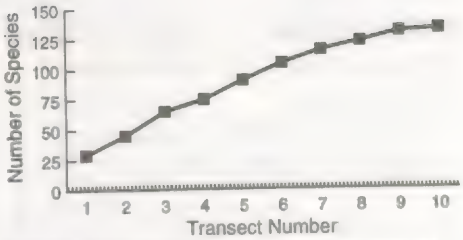
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	74	35	1	110
NUMBER OF INDIVIDUALS	212	102	1	315
NUMBER OF FAMILIES	35	19	1	47
BASAL AREA	3.00	.73	0.0005	3.73 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 10	Bignoniaceae 47	*Clytostoma pterocalyx* - 24
Bignoniaceae 8	Fabaceae 25	*Carica cauliflora* - 19
Apocynaceae 7	Meliaceae 21	*Tabebuia impetiginosa* - 13
Sapindaceae 6	Apocynaceae 20	*Simira cordifolia* - 11
Combretaceae 6	Caricaceae 19	*Trichilia acuminata* - 11
Flacourtiaceae 5	Rubiaceae 16	*Trichilia* sp.2 - 9
Sapotaceae 5	Celastraceae 12	*Aspidosperma polyneuron* - 9
Celastraceae 5	Euphorbiaceae 12	*Cissus* sp.1 - 9
Euphorbiaceae 4	Moraceae 12	*Chamissoa altissima* - 8
Moraceae 4	2 families with 11	*Phyllanthus anisolobus* - 7

SITE NO. 106: Farallones de Cali (farall)
LOCALITY: Colombia. Valle: Santa Helena, above Topacio, edge of Los Farallones de Cali National Park.
COORDINATES: 03°30' N, 76°35' W
COLLECTORS: A. Gentry, M. Monsalve, Z. Piñeros, A. Lieberman
VOUCHERS: 52978 - 53200
DATES: 10 - 12 December 1985

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane moist forest
ELEVATION: 1,930 m
ANN. RAINFALL: 1,500 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 82.53



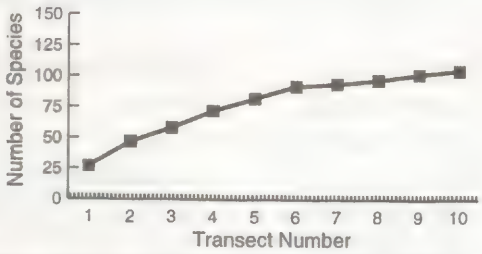
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	106	19	8	133
NUMBER OF INDIVIDUALS	279	43	9	331
NUMBER OF FAMILIES	40	15	5	55
BASAL AREA	9.23	0.076	1.17	10.47 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 14	Euphorbiaceae 43	*Alchornea glandulosa* - 19
Lauraceae 12	Lauraceae 26	*Trigonobalanus excelsus* - 14
Melastomataceae 10	Melastomataceae 25	*Mabea* sp.1 - 14
Euphorbiaceae 9	Clusiaceae 22	*Tovomitopsis* sp.1 - 12
Clusiaceae 6	Cyatheaceae 22	*Brunellia* sp.1 - 9
Cyatheaceae 6	Rubiaceae 20	*Urera baccifera* - 9
Moraceae 6	Fagaceae 14	*Miconia acuminifera* - 8
4 families with 4	Bignoniaceae 12	*Cyathea* sp.1 - 8
	Fabaceae 11	*Amphilophium paniculatum* - 7
	Moraceae 11	*Ossaea* sp.1 - 7

SITE NO. 107: Finca Mehrenberg (fincam)
LOCALITY: Colombia. Huila: Finca Mehrenberg, Cauca border, E of Leticia.
COORDINATES: 02°16' N, 76°12' W
COLLECTORS: A. Gentry, M. Monsalve, P. Silverstone, E. Zardini
VOUCHERS: 47657 - 47778, 53878 - 53958
DATES: 7 - 8 July 1984, 1 -3 April 1986

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane wet forest
ELEVATION: 2,275 - 2,300 m
ANN. RAINFALL: 2,290 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 51.27



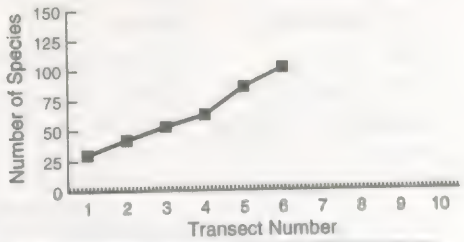
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	82	18	6	106
NUMBER OF INDIVIDUALS	289	51	14	354
NUMBER OF FAMILIES	36	8	3	43
BASAL AREA	5.12	0.039	0.87	6.03 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Asteraceae 9	Rubiaceae 66	*Palicourea calycina* - 48
Melastomataceae 9	Melastomataceae 33	Ericaceae gen. 2 sp.1 - 15
Lauraceae 8	Cyatheaceae 24	*Quercus humboldtii* - 14
Rubiaceae 7	Asteraceae 18	*Billia colombiana* - 12
Cyatheaceae 5	Ericaceae 18	*Cinchona pubescens* - 11
Araceae 4	Lauraceae 17	*Alchornea latifolia* - 11
Monimiaceae 4	Fagaceae 14	*Cyathea caracasana* - 10
Solanaceae 4	Myrsinaceae 14	*Cybianthus occigranatensis* - 9
Moraceae 4	Euphorbiaceae 12	*Inga densiflora* - 8
Myrsinaceae 4	Hippocastanaceae 12	*Hedyosmum racemosum* - 8

SITE NO. 108: Finca Zingara (fincaz)
LOCALITY: Colombia. Valle: Finca Zingara, Corregimiento La Dividera, crest of Cordillera Occidental W of Cali, 6 km N of Cali-Buenaventura Hwy.
COORDINATES: 03°32' N, 76°35' W
COLLECTORS: A. Gentry, M. Monsalve, P. Silverstone, C. Restrepo, J. Giraldo
VOUCHERS: 53163 - 53261, 53513 - 53571
DATES: 12 - 13 December 1985, 24 March 1986

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane moist forest
ELEVATION: 1,960 m
ANN. RAINFALL: 1,647 mm
SOIL DATA: Not available
AREA SAMPLED: 600m^2
FISHER'S ALPHA: 57.75



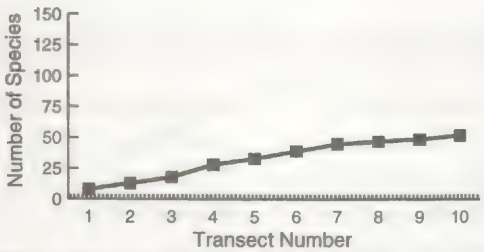
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	78	12	12	102
NUMBER OF INDIVIDUALS	240	23	17	280
NUMBER OF FAMILIES	30	12	8	40
BASAL AREA	1.98	0.011	0.11	2.10 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 12	Piperaceae 28	*Piper* cf. *begoniicolor* - 28
Melastomataceae 11	Rubiaceae 24	*Helicostylis tovarensis* - 16
Lauraceae 10	Melastomataceae 23	*Cybianthus occigranatensis* - 14
Araliaceae 5	Lauraceae 23	*Eugenia* sp.1 - 11
Fabaceae 5	Myrsinaceae 19	*Miconia* sp.1 - 8
Euphorbiaceae 5	Moraceae 18	*Ocotea tonduzii* - 8
Clusiaceae 4	Myrtaceae 15	*Eschweilera* sp.1 - 7
Lecythidaceae 4	Lecythidaceae 14	*Weinmannia* sp.1 - 6
Moraceae 3	Euphorbiaceae 12	*Clusia octopetala* - 6
Myrtaceae 3	Clusiaceae 10	5 species with 5

SITE NO. 109: Galerazamba (galeraz)
LOCALITY: Colombia. Bolívar: Galerazamba, N tip of Bolívar Department.
COORDINATES: 10°48' N, 75°15' W
COLLECTORS: A. Gentry, H. Cuadros
VOUCHERS: 47409 - 47470
DATES: 30 June - 1 July 1984

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical very dry forest
ELEVATION: 10 m
ANN. RAINFALL: 500 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 21.04



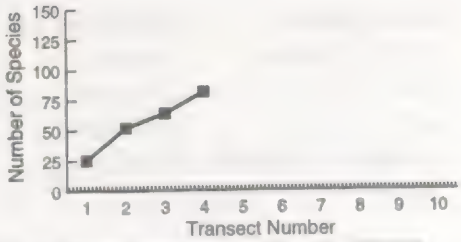
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	34	18	0	52
NUMBER OF INDIVIDUALS	122	106	0	228
NUMBER OF FAMILIES	19	13	0	24
BASAL AREA	2.08	.20	0	2.28 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 9	Celastraceae 36	*Pristimera verrucosa* - 36
Bignoniaceae 5	Cactaceae 32	*Pereskia guamacho* - 27
Capparaceae 5	Bignoniaceae 24	*Malpighia emarginata* - 17
Cactaceae 3	Fabaceae 20	*Arrabidaea pubescens* - 10
Nyctaginaceae 3	Malpighiaceae 20	*Crataeva tapia* - 8
8 families with 2	Capparaceae 19	*Guazuma ulmifolia* - 7
	Polygonaceae 10	*Pisonia aculeata* - 7
	Nyctaginaceae 9	*Seguiera aculeata* - 7
	Phytolaccaceae 8	*Dalbergia* sp.1 - 7
	2 families with 2	2 species with 6

SITE NO. 110: Hacienda Himalaya (hachimal)
LOCALITY: Colombia. Valle: El Silencio, Hacienda Himalaya, Cordillera Occidental W of Yumbo.
COORDINATES: 03°38' N, 76°33' W
COLLECTORS: A. Gentry, R. Ruiz, S. Sarria, C. Galvis
VOUCHERS: 65392 - 65498
DATES: 2 - 4 February 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane moist forest
ELEVATION: 1,860 m
ANN. RAINFALL: 1,500 mm *
SOIL DATA: Not available
AREA SAMPLED: 400 m^2
FISHER'S ALPHA: 49.71



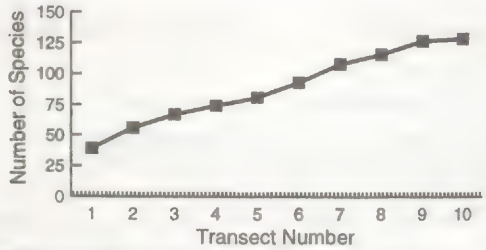
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	54	17	11	82
NUMBER OF INDIVIDUALS	146	46	17	209
NUMBER OF FAMILIES	26	13	8	40
BASAL AREA	2.13	0.039	0.19	2.36 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Moraceae 8	Rubiaceae 34	*Faramea* sp.1 - 31
Melastomataceae 7	Myristicaceae 18	*Otoba* sp.1 - 17
Fabaceae 5	Poaceae 17	*Chusquea latifolia* - 17
Annonaceae 4	Melastomataceae 15	*Chrysochlamys* sp.1 - 9
Rubiaceae 4	Moraceae 11	*Siparuna laurifolia* - 6
Cucurbitaceae 3	Clusiaceae 10	*Gloeospermum* sp.1 - 6
Sapindaceae 3	Annonaceae 9	*Annona* sp.1 - 5
Myrsinaceae 3	4 families with 6	4 species with 4
13 families with 2		

SITE NO. 111: La Planada (laplanad)
LOCALITY: Colombia. Nariño: La Planada, S of Ricaurte, 7 km from Tumaco-Pasto Road.
COORDINATES: 01°08' N, 77°58' W
COLLECTORS: A. Gentry, O. de Benavides
VOUCHERS: 35078 - 35182, 55008 - 55118
DATES: 28 - 29 November 1981, 24 - 25 July 1986

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane rain forest
ELEVATION: 1,800 m
ANN. RAINFALL: 4,300 mm est.(A. Gentry)
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 63.35



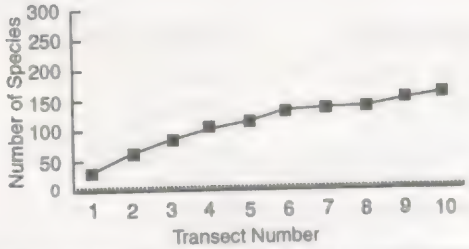
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	94	5	30	129
NUMBER OF INDIVIDUALS	333	13	76	422
NUMBER OF FAMILIES	35	4	10	41
BASAL AREA	4.31	0.037	0.061	4.41 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Araceae 13	Rubiaceae 78	*Faramea glandulosa* - 50
Melastomataceae 11	Arecaceae 54	*Prestoea* sp.1 - 14
Rubiaceae 9	Araceae 41	*Quararibea* sp.1 - 12
Arecaceae 7	Melastomataceae 30	*Aiphanes* sp.1 - 12
Fabaceae 7	Fabaceae 27	*Palicourea ovalifolia* - 11
Cyatheaceae 7	Cyatheaceae 20	*Geonoma* sp.1 - 11
Clusiaceae 6	Clusiaceae 16	*Anthurium* sp.1 - 10
Ericaceae 5	Cyclanthaceae 15	*Prestoea purpurea* - 9
Cyclanthaceae 5	Bombacaceae 14	*Hyeronima oblonga* - 9
Lauraceae 5	Euphorbiaceae 13	2 species with 8

SITE NO. 112: La Raya (laraya)
LOCALITY: Colombia. Bolívar: Quebrada La Culebra, La Raya, Caño Caribona between junction of Río Cauca and Río Magdalena.
COORDINATES: 08°20' N, 74°55' W
COLLECTORS: A. Gentry, H. Cuadros
VOUCHERS: 57247 - 57449
DATES: 4 - 6 May 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 50-80 m
ANN. RAINFALL: 3,000 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 99.08



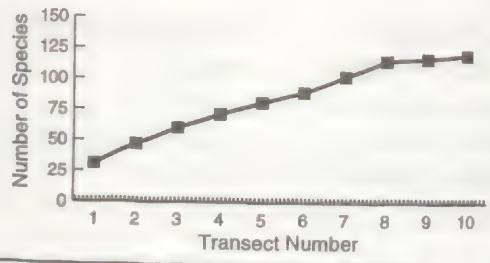
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	130	30	0	160
NUMBER OF INDIVIDUALS	325	74	0	399
NUMBER OF FAMILIES	43	17	0	52
BASAL AREA	4.58	0.25	0	4.83 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 20	Moraceae 63	*Pinzona coriacea* - 21
Moraceae 12	Fabaceae 44	*Helianthostylis sprucei* - 11
Rubiaceae 9	Arecaceae 31	*Naucleopsis glabra* - 11
Arecaceae 8	Dilleniaceae 27	*Iryanthera ulei* - 9
Apocynaceae 8	Myristicaceae 18	*Pseudolmedia laevigata* - 9
Sapindaceae 6	Violaceae 18	*Leonia triandra* - 9
Annonaceae 6	Clusiaceae 16	*Marila scrobiculata* - 9
Bignoniaceae 6	Rubiaceae 13	*Rinorea lindeniana* - 9
3 families with 5	Sapindaceae 12	*Sorocea trophoides* - 8
	Annonaceae 12	5 species with 7

SITE NO. 113: Loma de los Colorados (colorado)
LOCALITY: Colombia. Bolívar: San Juan Nepomuceno, Loma de Los Colorados, ca. 2 km S of San Juan, Cartagena-Magangue Road.
COORDINATES: 09°58' N, 75°10' W
COLLECTORS: A. Gentry, H. Cuadros
VOUCHERS: 57450 - 57495, 60563A - 60674, 64782 - 64805
DATES: 7 May 1987, 11 - 13 January 1988, 17 January 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 200 - 250 m
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 50.57



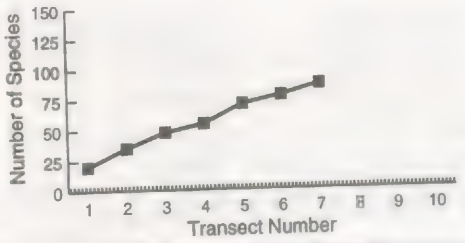
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	84	36	0	120
NUMBER OF INDIVIDUALS	354	138	0	492
NUMBER OF FAMILIES	32	16	0	41
BASAL AREA	3.18	0.22	0	3.40 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 19	Fabaceae 108	*Ampelocera macphersonii* - 29
Bignoniaceae 13	Bignoniaceae 59	*Pterocarpus floribundus* - 27
Sapindaceae 8	Capparaceae 35	*Capparis verrucosa* - 19
Apocynaceae 6	Ulmaceae 33	*Clytostoma pterocalyx* - 19
Capparaceae 6	Apocynaceae 22	*Calliandra magdalenae* - 18
Rubiaceae 6	Sapindaceae 21	*Coursetia arborea* - 17
Nyctaginaceae 5	Euphorbiaceae 19	*Trichilia acuminata* - 16
4 families with 4	Nyctaginaceae 17	Celastraceae gen.1 sp.1 - 13
	Meliaceae 16	*Sebastiana* sp.1 - 13
	Rutaceae 16	2 species with 12

SITE NO. 114: Manaure (manaure)
LOCALITY: Colombia. César: ca. 5 km W of Manaure on road to La Paz.
COORDINATES: 10°22' N, 73°08' W
COLLECTORS: A. Gentry, H. Cuadros
VOUCHERS: 57122 - 57149, 60689 - 60759
DATES: 26 April 1987, 13 - 14 January 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane moist forest
ELEVATION: 540 m
ANN. RAINFALL: 1,500 mm *
SOIL DATA: Not available
AREA SAMPLED: 700 m²
FISHER'S ALPHA: 47.35



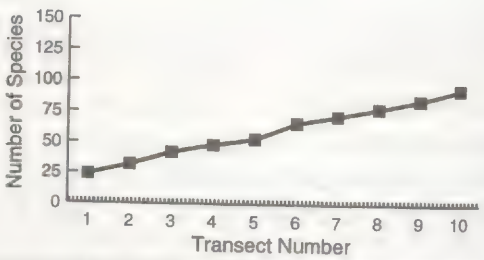
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	63	23	1	87
NUMBER OF INDIVIDUALS	197	50	3	250
NUMBER OF FAMILIES	26	11	1	30
BASAL AREA	4.43	0.11	0.0017	4.54 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 19	Fabaceae 36	*Simira mollis* - 30
Apocynaceae 8	Rubiaceae 32	*Cnidoscolus vitifolius* - 10
Sapindaceae 8	Sapindaceae 24	*Amyris ignea* - 9
Euphorbiaceae 6	Euphorbiaceae 19	*Coccoloba* sp.1 - 9
Bignoniaceae 4	Myrtaceae 13	*Calycorectes* sp.1 - 9
Anacardiaceae 3	Apocynaceae 12	*Gyrocarpus americanus* - 8
Bombacaceae 3	Polygonaceae 10	*Calliandra magdalenae* - 7
Moraceae 3	Malpighiaceae 9	*Hiraea reclinata* - 6
Rubiaceae 3	Moraceae 9	*Erythroxylum havanense* - 6
Verbenaceae 3	Rutaceae 9	Asteraceae gen. 1 sp.1 - 6

SITE NO. 115: Mariquita (mariquit)
LOCALITY: Colombia. Tolima: Mariquita, municipal forest reserve.
COORDINATES: 05°15' N, 74°50' W
COLLECTORS: A. Gentry, A. Repizzo, C. Barbosa, R. Ortiz
VOUCHERS: 71835 - 71940
DATES: 18 - 19 Dec. 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 560 m
ANN. RAINFALL: 1,920 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 43.24



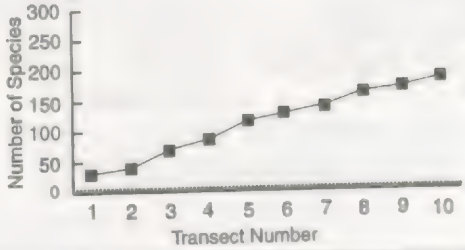
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	78	16	0	94
NUMBER OF INDIVIDUALS	310	27	0	337
NUMBER OF FAMILIES	36	8	0	39
BASAL AREA	5.22	0.032	0	5.25 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 18	Rubiaceae 45	*Amaioua guianensis* - 38
Sapindaceae 6	Myrtaceae 39	*Eugenia* sp.1 - 36
Bignoniaceae 6	Arecaceae 38	*Bactris* sp.1 - 35
Rubiaceae 6	Flacourtiaceae 37	*Ryania* sp.1 - 28
Monimiaceae 4	Fabaceae 25	*Lacistema aggregatum* - 17
Myrtaceae 4	Lacistemataceae 17	*Vochysia ferruginea* - 14
5 families with 3	Bignoniaceae 15	*Pera* sp.1 - 10
	Vochysiaceae 14	Lauraceae gen.1 sp.1 - 9
	Euphorbiaceae 11	*Casearia* sp.2 - 8
	Lauraceae 10	*Jacaranda copaia* - 8

SITE NO. 116: Murrí (murri)
LOCALITY: Colombia. Antioquia: Murrí, La Blanquita, Rio Murrí, hills above village.
COORDINATES: 06°35' N, 76°50' W
COLLECTORS: A. Gentry, C. Barbosa, D. Cárdenas
VOUCHERS: 75723 - 75959
DATES: 28 February - 1 March 1992

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane rain forest
ELEVATION: 910 m
ANN. RAINFALL: 4,200 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 162.06



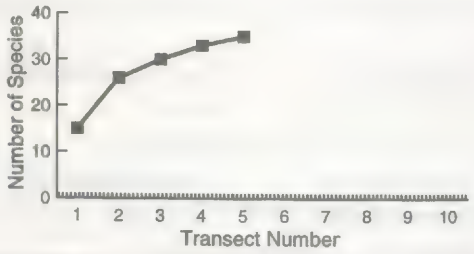
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	131	19	29	179
NUMBER OF INDIVIDUALS	249	31	47	327
NUMBER OF FAMILIES	44	14	12	56
BASAL AREA	4.28	0.065	0.049	4.40 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 13	Rubiaceae 30	*Otoba acuminata* - 11
Moraceae 13	Fabaceae 27	*Hippotis albiflora* - 9
Rubiaceae 13	Arecaceae 26	*Pterocarpus magnicarpus* - 7
Melastomataceae 12	Moraceae 18	*Chamaedorea polyclada* - 6
Arecaceae 10	Melastomataceae 17	*Hydrangea* sp.1 - 6
Araceae 9	Araceae 16	*Hoffmannia* sp.1 - 5
Annonaceae 8	Myristicaceae 12	*Miconia* sp.6 - 5
Meliaceae 6	Lauraceae 11	*Pouteria* sp.1 - 5
Lauraceae 6	Cucurbitaceae 10	9 species with 4
3 families with 5	Annonaceae 10	

SITE NO. 117: Neusa (neusa)
LOCALITY: Colombia. Cundinamarca: near Neusa dam, N of Bogotá.
COORDINATES: 05°10' N, 74°08' W
COLLECTORS: A. Gentry, S. Carrizosa
VOUCHERS: 68064 - 68099
DATES: 23 October 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical montane moist forest
ELEVATION: 3,050 m
ANN. RAINFALL: 985 mm
SOIL DATA: Not available
AREA SAMPLED: 500 m^2
FISHER'S ALPHA: 10.93



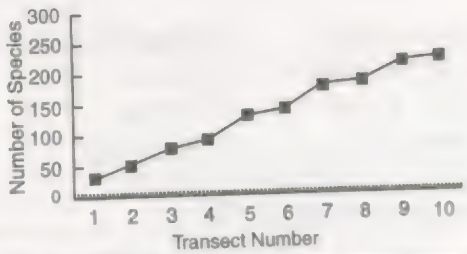
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	24	11	0	35
NUMBER OF INDIVIDUALS	231	27	0	258
NUMBER OF FAMILIES	17	3	0	19
BASAL AREA	2.95	0.034	0	2.98 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Asteraceae 7	Cunoniaceae 102	*Weinmannia tomentosa* - 102
Ericaceae 4	Myrsinaceae 39	*Geissanthus andinus* - 26
Myrsinaceae 4	Winteraceae 26	*Drimys winteri* - 26
Lauraceae 3	Melastomataceae 21	*Bucquetia glutinosa* - 14
Melastomataceae 3	Asteraceae 14	*Viburnum triphyllum* - 8
	Ericaceae 14	*Cavendishia* sp.1 - 7
	Caprifoliaceae 8	*Miconia ligustrina* - 6
	Lauraceae 7	4 species with 5
	Myrtaceae 5	
	Rosaceae 5	

SITE NO. 118: Río Manso (riomanso)
LOCALITY: Colombia. Cordoba: junction of Río Tigre and Río Manso, Paramillo National Park.
COORDINATES: 07°30' N, 76°05' W
COLLECTORS: A. Gentry, H. Cuadros
VOUCHERS: 63710 - 63946
DATES: 24 - 29 July 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical wet forest
ELEVATION: 200 m
ANN. RAINFALL: 4,000 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 182.38



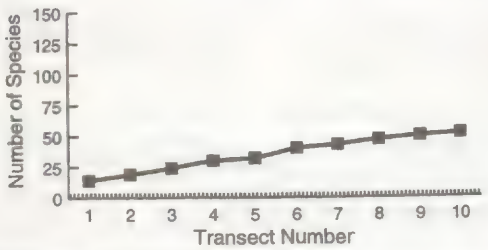
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	170	46	1	217
NUMBER OF INDIVIDUALS	341	75	1	417
NUMBER OF FAMILIES	39	21	1	50
BASAL AREA	4.23	0.13	0.0005	4.36 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 24	Fabaceae 67	*Macrolobium* sp.1 - 31
Moraceae 16	Arecaceae 37	*Quararibea* sp.1 - 16
Rubiaceae 15	Moraceae 32	*Socratea exorrhiza* - 8
Burseraceae 13	Rubiaceae 27	*Discophora guianensis* - 7
Arecaceae 11	Burseraceae 20	*Brosimum utile* - 7
Lauraceae 11	Bombacaceae 18	*Wettinia* sp.1 - 7
Bignoniaceae 10	Bignoniaceae 17	*Pleonotoma variabilis* - 6
Annonaceae 7	4 families with 12	*Geonoma* sp.1 - 6
Lecythidaceae 7		*Licania* sp.1 - 6
4 families with 6		6 species with 5

SITE NO. 119: Sabana Rubia (sabanaru)
LOCALITY: Colombia. César: Sabana Rubia, top of Serranía de Perijá, E of Manaure.
COORDINATES: 10°30' N, 72°55' W
COLLECTORS: A. Gentry, H. Cuadros
VOUCHERS: 79156 - 79222
DATES: 10 - 11 March 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical montane wet forest
ELEVATION: 2,940 m
ANN. RAINFALL: 1,500 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 17.16



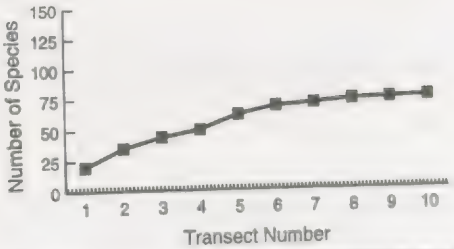
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	41	11	0	52
NUMBER OF INDIVIDUALS	318	20	0	338
NUMBER OF FAMILIES	26	8	0	32
BASAL AREA	7.96	0.017	0	7.97 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Asteraceae 7	Asteraceae 83	*Paragynoxys* sp.1 - 69
Lauraceae 4	Myrsinaceae 66	*Ardisia* sp.1 - 66
Melastomataceae 3	Melastomataceae 41	*Miconia* sp.1 - 16
Podocarpaceae 3	Caprifoliaceae 16	*Viburnum* sp.1 - 16
Rosaceae 3	Araliaceae 14	*Miconia* sp.2 - 15
Araliaceae 2	Myrtaceae 13	*Oreopanax* sp.1 - 12
Cunoniaceae 2	Lauraceae 12	*Miconia* sp.3 - 10
Ericaceae 2	Podocarpaceae 12	*Symplocos* sp.1 - 9
Myrtaceae 2	Cunoniaceae 9	*Myrcianthes* sp.1 - 9
Solanaceae 2	Symplocaceae 9	3 species with 8

SITE NO. 120: Lomas de Santo Tomás (santotom)
LOCALITY: Colombia. Tolima: Lomas de Santo Tomás, 10 km SW of Armero.
COORDINATES: 04°55' N, 74°50' W
COLLECTORS: A. Gentry, A. Repizzo, C. Barbosa, R. Ortiz
VOUCHERS: 71949 - 72044
DATES: 19 - 20 December 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 320 m
ANN. RAINFALL: 1,500 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 29.06



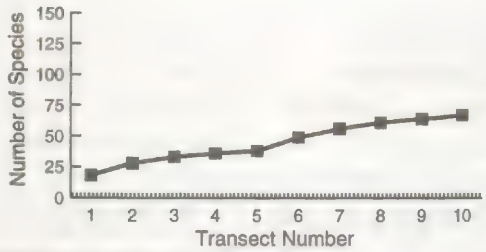
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	57	20	0	77
NUMBER OF INDIVIDUALS	297	85	0	382
NUMBER OF FAMILIES	27	12	0	32
BASAL AREA	3.24	0.073	0	3.31 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 10	Meliaceae 54	*Mayna* sp.1 - 39
Bignoniaceae 8	Bignoniaceae 46	*Trichilia* sp.1 - 32
Myrtaceae 5	Flacourtiaceae 42	*Triplaris* sp.1 - 23
Rubiaceae 5	Fabaceae 41	*Oxandra* sp.1 - 18
Capparaceae 4	Polygonaceae 36	*Astrocaryum* sp.1 - 18
Nyctaginaceae 4	Annonaceae 18	*Trichilia* sp.2 - 16
Flacourtiaceae 3	Arecaceae 18	*Hippocratea* sp.1 - 16
Meliaceae 3	Celastraceae 16	*Coccoloba* sp.1 - 13
Phytolaccaceae 3	Rubiaceae 12	*Cydista diversifolia* - 12
Sapindaceae 3	Apocynaceae 11	*Stizophyllum riparium* - 12

SITE NO. 121: Tayrona National Park (tayrona)
LOCALITY: Colombia. Magdalena: Tayrona National Park, overlooking Caribbean.
COORDINATES: 11°20' N, 74°02' W
COLLECTORS: A. Gentry, H. Cuadros
VOUCHERS: 47563 - 47603, 55476 - 55529
DATES: 3 July 1984, 23 August 1986

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 50 m
ANN. RAINFALL: 1,500 mm
SOIL DATA: Clinebell et al.1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 25.56



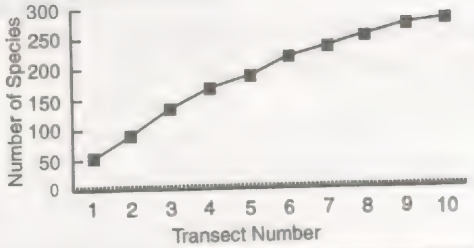
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	49	18	0	67
NUMBER OF INDIVIDUALS	231	95	0	326
NUMBER OF FAMILIES	25	9	0	30
BASAL AREA	3.40	0.082	0	3.48 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 12	Bignoniaceae 73	*Machaerium microphyllum* - 27
Bignoniaceae 7	Fabaceae 71	*Capparis verrucosa* - 25
Capparaceae 6	Capparaceae 48	*Casearia praecox* - 22
Sapindaceae 4	Flacourtiaceae 25	*Clytostoma pterocalyx* - 21
Anacardiaceae 3	Polygonaceae 13	*Cydista diversifolia* - 14
Apocynaceae 3	Sapindaceae 13	*Coccoloba coronata* - 13
Convolvulaceae 3	Nyctaginaceae 11	*Lonchocarpus* sp.1 - 12
Nyctaginaceae 3	Rubiaceae 10	*Macfadyena unguis-cati* - 12
4 families with 2	Erythroxylaceae 8	*Arrabidaea conjugata* - 10
	3 families with 6	3 species with 9

SITE NO. 122: Tutunendo (tutunend)
LOCALITY: Colombia. Chocó: Quibdó-Tutunendo Road ca. 3 km W of Tutunendo.
COORDINATES: 05°46' N, 76°35' W
COLLECTORS: A. Gentry
VOUCHERS: 24256 - 24495, 30091 - 30360
DATES: 5 - 8 January 1981

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical rain forest
ELEVATION: 90 m
ANN. RAINFALL: 9,000 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 231.70



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	226	41	6	273
NUMBER OF INDIVIDUALS	456	57	8	521
NUMBER OF FAMILIES	47	21	3	59
BASAL AREA	3.49	0.063	0.0039	3.56 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 26	Arecaceae 72	*Oenocarpus bataua* - 17
Rubiaceae 22	Rubiaceae 46	*Iryanthera ulei* - 11
Arecaceae 20	Fabaceae 45	*Croton tessmannii* - 11
Melastomataceae 14	Melastomataceae 34	*Bactris* cf. *coloniata* - 10
Annonaceae 14	Lecythidaceae 31	*Faramea jefensis* - 8
Sapotaceae 13	Annonaceae 217	*Wettinia quinaria* - 7
Clusiaceae 13	Euphorbiaceae 27	*Bactris* sp.1 - 7
Lecythidaceae 12	Myristicaceae 23	*Tetrorchidium gorgonae* - 6
Lauraceae 10	Sapotaceae 18	*Miconia punctata* - 6
Moraceae 10	Clusiaceae 18	11 species with 5

SITE NO. 123: Ucumarí (ucumari)
LOCALITY: Colombia. Talima: Cordillera de Calarma.
COORDINATES: 04°00' N, 75°30' W
COLLECTORS: O. Rangel
VOUCHERS: 187 - 552
DATES:

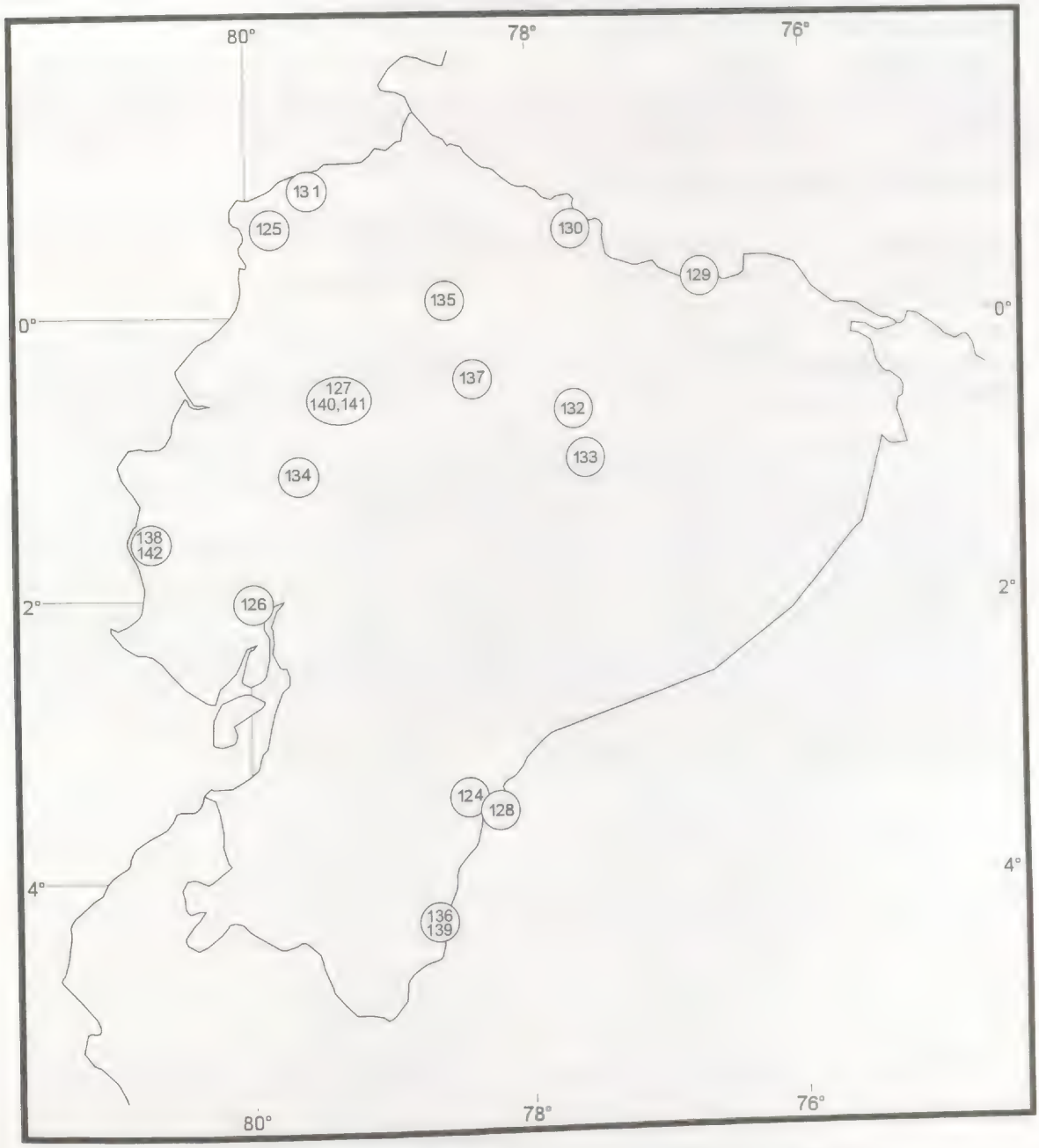
ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane wet forest
ELEVATION: 2,620 m
ANN. RAINFALL: 3,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 41.35

	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	93	17	0	110
NUMBER OF INDIVIDUALS	389	161	0	550
NUMBER OF FAMILIES	37	11	0	47
BASAL AREA	5.25	0.15	0	5.40 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 12	Araceae 89	*Anthurium* sp.1 - 84
Melastomataceae 11	Rubiaceae 69	*Hydrangea* sp.1 - 28
Rubiaceae 6	Melastomataceae 37	*Psychotria* sp.1 - 27
Araliaceae 5	Araliaceae 34	*Prunus* sp.1 - 25
Asteraceae 5	Euphorbiaceae 29	*Palicourea* sp.2 - 22
Sabiaceae 5	Hydrangeaceae 28	*Hyeronima* sp.1 - 19
Solanaceae 5	Rosaceae 27	*Oreopanax* sp.1 - 18
5 families with 3	Asteraceae 19	*Turpinia occidentalis* - 17
	Lauraceae 18	*Chusquea* sp.1 - 15
	Staphyleaceae 17	*Ladenbergia* sp.1 - 14

3C. Ecuador, sites 124–142.

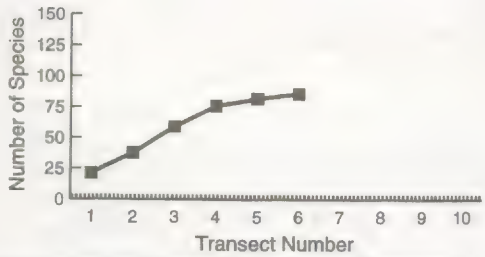


124 – Campamento Achupalla, Ecuador
125 – Fila de Bilsa, Ecuador
126 – Capeira, Ecuador
127 – Centinela, Ecuador
128 – Cuangos, Ecuador
129 – Dureno, Ecuador
130 – El Corazón, Ecuador
131 – Esmeraldas Tropical Garden, Ecuador
132 – Huamaní, Ecuador
133 – Jatun Sacha, Ecuador
134 – Jauneche, Ecuador
135 – Maquipucuna, Ecuador
136 – Miazi, Ecuador
137 – Pasochoa, Ecuador
138 – Perro Muerto, Ecuador
139 – Río Nangaritza, Ecuador
140 – Río Palenque 1, Ecuador
141 – Río Palenque 2, Ecuador
142 – San Sebastián, Ecuador

SITE NO. 124: Campamento Achupalla (achupall)
LOCALITY: Ecuador. Campamento Achupalla, Morona-Santiago: Cordillera del Cóndor, 15 km E of Gualaquíza.
COORDINATES: 03°27' S, 78°22' W
COLLECTORS: A. Gentry
VOUCHERS: 80362 - 80452
DATES: 23 - 25 July 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane wet forest
ELEVATION: 2,100 m
ANN. RAINFALL: 2,500 mm *
SOIL DATA: Not available
AREA SAMPLED: 600 m^2
FISHER'S ALPHA: 32.41



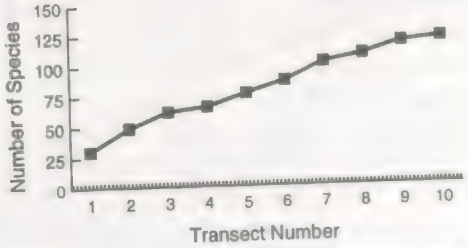
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	80	3	3	86
NUMBER OF INDIVIDUALS	421	3	4	428
NUMBER OF FAMILIES	32	2	2	33
BASAL AREA	1.33	0.0017	0.0053	1.34 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Melastomataceae 11	Clusiaceae 86	*Clusia* sp.4 - 37
Rubiaceae 9	Araliaceae 59	*Schefflera* sp.1 - 35
Araliaceae 6	Melastomataceae 52	*Miconia* sp.2 - 21
Clusiaceae 6	Rubiaceae 36	*Clusia* sp.2 - 16
Cunoniaceae 5	Arecaceae 20	*Geonoma* sp.1 - 14
Aquifoliaceae 4	Cunoniaceae 19	*Clusia* sp.1 - 14
7 families with 3	Euphorbiaceae 18	*Psychotria* sp.1 - 13
	Araceae 12	*Schefflera* sp.2 - 13
	Cyatheaceae 12	*Cyathea* sp.1 - 12
	Aquifoliaceae 11	*Alchornea pearcei* - 11

SITE NO. 125: Fila de Bilsa (bilsa)
LOCALITY: Ecuador. Esmeraldas: Filo de Bilsa, 7 km E of San Jose de Bilsa, ca. 80 km SW of Esmeraldas, 12 km SE of El Salto on Atacames-Muisne Road.
COORDINATES: 00°37' N, 79°51' W
COLLECTORS: A. Gentry, C. Josse
VOUCHERS: 72772 - 72935
DATES: 28 - 30 January 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 280 m
ANN. RAINFALL: 2,500 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 80.32



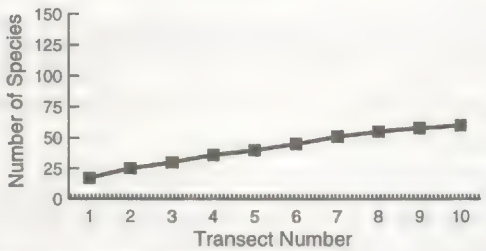
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	86	19	16	121
NUMBER OF INDIVIDUALS	224	36	22	282
NUMBER OF FAMILIES	37	11	8	47
BASAL AREA	4.03	0.036	0.049	4.12 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 13	Rubiaceae 44	*Otoba novogranatensis* - 17
Araceae 8	Myristicaceae 24	*Perebea angustifolia* - 12
Arecaceae 6	Arecaceae 17	*Cheiloclinium* sp.1 - 12
Piperaceae 6	Moraceae 17	*Coussarea latifolia* - 11
Apocynaceae 5	Lecythidaceae 16	*Polybotrya polybotrioides* - 9
Clusiaceae 5	Celastraceae 13	*Grias peruviana* - 9
Lauraceae 5	Aspleniaceae 11	*Psychotria* sp.2 - 9
7 families with 4	Bombacaceae 11	*Posoqueria* cf. *maxima* - 8
	Piperaceae 10	*Catoblastus* sp.1 - 7
	3 families with 9	*Miconia* sp.1 - 6

SITE NO. 126: Capeira (capeira)
LOCALITY: Ecuador. Guayas: Capeira, Km 21, Guayaquil to Daule.
COORDINATES: 02°00' S, 79°58' W
COLLECTORS: C. Dodson, A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical very dry forest
ELEVATION: 50 m
ANN. RAINFALL: 804 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 26.61



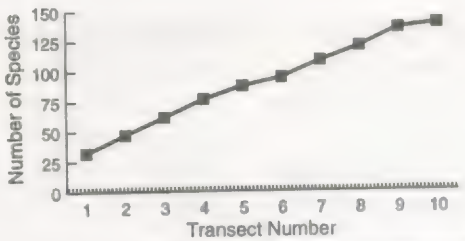
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	40	20	0	60
NUMBER OF INDIVIDUALS	170	57	0	227
NUMBER OF FAMILIES	21	11	0	27
BASAL AREA	5.60	0.10	0	5.70 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 12	Fabaceae 49	Sapotaceae gen.1 sp.1 - 17
Bignoniaceae 6	Bignoniaceae 28	*Machaerium capote* - 16
Rubiaceae 5	Sapotaceae 17	*Gustavia angustifolia* - 15
Bombacaceae 4	Rubiaceae 16	*Sorocea sprucei* - 14
Boraginaceae 3	Lecythidaceae 15	*Simira ecuadorensis* - 9
Sapindaceae 3	Moraceae 15	*Tabebuia chrysantha* - 8
6 families with 2	Bombacaceae 13	*Cissus rhombifolia* - 8
	Vitaceae 12	4 species with 7
	4 families with 7	

SITE NO. 127: Centinela (centinel)
LOCALITY: Ecuador. Pichincha: Centinela ridge-top, Km 12 carretera Patricia Pilar-24 de Mayo, Altura de Km 47 Santo Domingo-Quevedo.
COORDINATES: 00°35' S, 79°20' W
COLLECTORS: C. Dodson
VOUCHERS: 14616 - 14819
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical wet forest
ELEVATION: 650 - 800 m
ANN. RAINFALL: 4,500+ mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 74.70



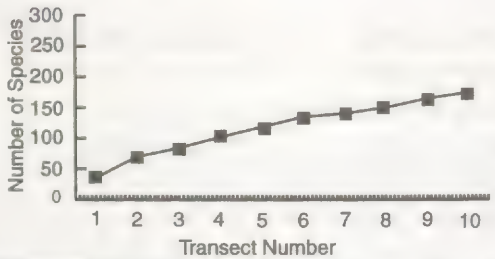
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	107	24	9	140
NUMBER OF INDIVIDUALS	336	59	16	411
NUMBER OF FAMILIES	37	20	7	55
BASAL AREA	3.85	0.05	0.05	3.95 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 11	Melastomataceae 53	*Catoblastus velutinus* - 38
Arecaceae 9	Arecaceae 52	Melastomataceae gen.3 sp.1 - 38
Rubiaceae 9	Myrtaceae 29	*Eugenia* sp.1 - 25
Fabaceae 7	Bombacaceae 28	*Quararibea grandifolia* - 18
Meliaceae 7	Meliaceae 25	*Cissus brevipes* - 16
Moraceae 7	Rubiaceae 22	*Carapa megistocarpa* - 14
Annonaceae 5	Vitaceae 17	Melastomataceae gen.2 sp.1 - 10
Bombacaceae 5	Clusiaceae 14	*Tovomita weddeliana* - 9
Lecythidaceae 5	Moraceae 14	*Faramea* sp.3 - 7
3 families with 4	2 families with 13	*Protium* sp.1 - 6

SITE NO. 128: Cuangos (cuangos)
LOCALITY: Ecuador. Morona-Santiago: Cordillera del Condor, Cuangos, 20 km E of Gualaquiza.
COORDINATES: 03°29' S, 78°14' W
COLLECTORS: A. Gentry
VOUCHERS: 80023 - 80233
DATES: 17 - 20 July 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane wet forest
ELEVATION: 1,500 - 1,600 m
ANN. RAINFALL: 2,500 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 108.60



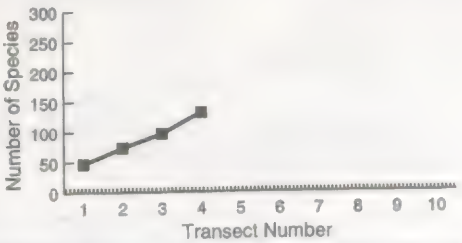
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	119	23	28	170
NUMBER OF INDIVIDUALS	323	42	46	411
NUMBER OF FAMILIES	41	14	12	58
BASAL AREA	4.67	0.036	0.57	5.27 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Melastomataceae 21	Arecaceae 51	*Wettinia* sp.1 - 41
Fabaceae 13	Melastomataceae 39	*Cyathea* sp.1 - 17
Lauraceae 13	Lauraceae 38	*Aniba* sp.1 - 16
Rubiaceae 13	Rubiaceae 37	*Vochysia* sp.1 - 9
Asteraceae 6	Fabaceae 23	*Ocotea* sp.1 - 8
Annonaceae 6	Cyatheaceae 19	*Neea* sp.1 - 8
5 families with 5	Nyctaginaceae 12	*Pithecellobium* sp.1 - 8
	Bignoniaceae 12	*Coussarea* sp.1 - 8
	Annonaceae 11	*Miconia* sp.3 - 7
	2 families with 10	2 species with 6

SITE NO. 129: Dureno (dureno)
LOCALITY: Ecuador. Napo: Forestry reserve of the Cofan community of Dureno, Río Aguarico.
COORDINATES: 00°15' N, 76°45' W
COLLECTORS: A. Gentry, C. Cerón, G. Benavides
VOUCHERS: 64205 - 64361
DATES: 27 - 28 December 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 300 m
ANN. RAINFALL: 3,000 mm
SOIL DATA: Not available
AREA SAMPLED: 400 m²
FISHER'S ALPHA: 186.49



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	105	23	4	132
NUMBER OF INDIVIDUALS	148	34	10	192
NUMBER OF FAMILIES	40	13	3	48
BASAL AREA	2.43	0.077	0.013	2.52 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 15	Fabaceae 25	*Quararibea* sp.3 - 6
Moraceae 10	Meliaceae 12	*Polybotrya osmundacea* - 6
Rubiaceae 8	Moraceae 12	*Machaerium cuspidatum* - 5
Meliaceae 7	Rubiaceae 12	*Iriartea deltoidea* - 5
Lauraceae 6	Arecaceae 10	*Pithecellobium macrophyllum* - 4
Arecaceae 5	Bombacaceae 10	*Guarea grandifolia* - 4
Sapindaceae 5	Myristicaceae 8	7 species with 3
Myristicaceae 5	Sapindaceae 7	
3 families with 4	Aspleniaceae 7	
	Lauraceae 6	

SITE NO. 130: El Corazón (elcoraz)
LOCALITY: Ecuador. Carchi: Montufar Carton, Loma El Corazón (Bretaña) SE of Mariscal Sucre, Río Minas.
COORDINATES: 00°35' N, 77°42' W
COLLECTORS: W. Palacios, G. Tipaz
VOUCHERS: 10591 - 10620
DATES: 23 December 1992

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical montane wet forest
ELEVATION: 3,150 m
ANN. RAINFALL: 3,700 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2, not divided into 0.01 subplots
FISHER'S ALPHA: 10.78

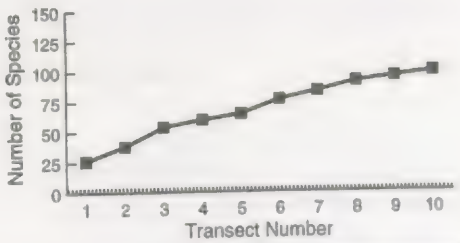
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	40	not sampled	not sampled	40
NUMBER OF INDIVIDUALS	430	not sampled	not sampled	430
NUMBER OF FAMILIES	23	not sampled	not sampled	23
BASAL AREA	7.20	not sampled	not sampled	7.20 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Asteraceae 5	Melastomataceae 105	*Miconia ochracea* - 71
Melastomataceae 4	Rubiaceae 84	*Palicourea* sp.1 - 47
Araliaceae 3	Piperaceae 41	*Palicourea* sp.2 - 37
Piperaceae 3	Asteraceae 33	*Meliosma arenosa* - 32
Araceae 2	Sabiaceae 32	*Piper* sp.1 - 29
Cunoniaceae 2	Lauraceae 22	*Miconia theazans* - 28
Cyatheaceae 2	Caprifoliaceae 21	*Viburnum triphyllum* - 21
Lauraceae 2	Actinidiaceae 17	*Ocotea* sp.1 - 21
Rubiaceae 2	Rosaceae 12	*Grosvenoria rimbachii* - 21
Solanaceae 2	Araliaceae 11	*Saurauia bullosa* - 17

SITE NO. 131: Esmeraldas Tropical Garden (esmerald)
LOCALITY: Ecuador. Esmeraldas: Universidad Técnica Luis Vargas Torres, W of San Mateo, Reserva Forestal de Jardin Tropical.
COORDINATES: 00°54' N, 79°37' W
COLLECTORS: A. Gentry, R. Foster
VOUCHERS: 73001 - 73112
DATES: 2 - 4 February 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 150 m
ANN. RAINFALL: 1,750 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 46.40



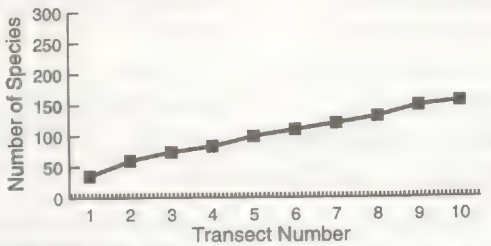
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	65	33	2	100
NUMBER OF INDIVIDUALS	268	84	2	354
NUMBER OF FAMILIES	29	19	2	44
BASAL AREA	4.93	0.15	0.016	5.09 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 10	Moraceae 51	*Faramea occidentalis* - 34
Moraceae 8	Meliaceae 46	*Trichilia surinamensis* - 30
Fabaceae 7	Rubiaceae 41	*Pseudolmedia rigida* - 19
Rubiaceae 6	Bignoniaceae 25	*Guarea glabra* - 16
Myrtaceae 5	Sapindaceae 21	*Talisia* sp.1 - 15
Flacourtiaceae 4	Capparidaceae 18	*Stigmaphyllon* sp.1 - 13
6 families with 3	Fabaceae 17	*Sorocea sarcocarpa* - 12
	Malpighiaceae 16	*Inga umbellifera* - 11
	Euphorbiaceae 14	*Capparis macrophylla* - 10
	Arecaceae 8	3 species with 8

SITE NO. 132: Huamaní (huamani)
LOCALITY: Ecuador. Napo: Huamaní, Centro Challuhua Jacu, 31 km E of Tena-Baeza Road on new road to Coca.
COORDINATES: 00°40' S, 77°40' W
COLLECTORS: A. Gentry, C. Cerón, C. Blaney
VOUCHERS: 64002 - 64197
DATES: 23 - 25 December 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane moist forest
ELEVATION: 1,150 m
ANN. RAINFALL: 3,500 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 93.59



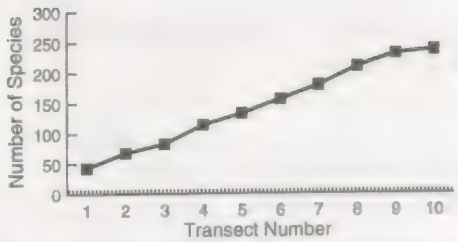
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	109	28	19	156
NUMBER OF INDIVIDUALS	290	62	50	402
NUMBER OF FAMILIES	40	21	9	59
BASAL AREA	5.02	0.078	0.032	5.13 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 21	Fabaceae 39	*Wettinia* sp.1 - 24
Annonaceae 8	Rubiaceae 30	*Dacryodes cupularis* - 18
Clusiaceae 7	Burseraceae 28	*Polybotrya alfredii* - 14
Lauraceae 7	Arecaceae 25	*Coussarea* sp.1 - 12
Sapindaceae 6	Aspleniaceae 14	*Faramea* sp.1 - 11
Rubiaceae 6	Clusiaceae 14	*Dichapetalum odoratum* - 11
Araceae 5	Lauraceae 14	*Cordia ucayaliensis* - 11
Burseraceae 5	Moraceae 14	*Perebea guianensis* - 10
Euphorbiaceae 5	Sapindaceae 13	*Meliosma* sp.1 - 8
4 families with 4	Boraginaceae 13	2 species with 7

SITE NO. 133: Jatun Sacha (jatunsac)
LOCALITY: Ecuador. Napo: Jatun Sacha Biological Station, 8 km E of Misahuallí.
COORDINATES: 01°04' S, 77°36' W
COLLECTORS: A. Gentry, D. Neill, S. Manning, P. Keating
VOUCHERS: 59875 - 60247
DATES: 28 - 30 December 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical wet forest
ELEVATION: 450 m
ANN. RAINFALL: 4,100 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 219.93



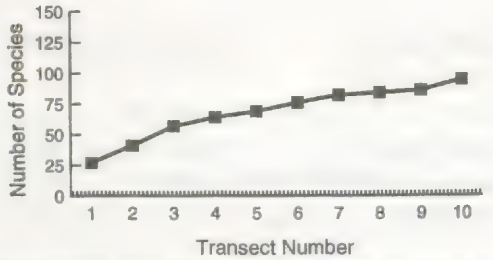
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	182	49	9	240
NUMBER OF INDIVIDUALS	339	83	13	435
NUMBER OF FAMILIES	47	25	5	64
BASAL AREA	4.34	0.21	0.0066	4.55 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 20	Myristicaceae 44	*Otoba parvifolia* - 27
Moraceae 15	Rubiaceae 37	*Phytelephas macrocarpa* ssp. *tenuicalis* - 10
Rubiaceae 14	Moraceae 30	*Tetrathylacium macrophyllum* - 9
Lauraceae 13	Fabaceae 27	*Coussarea paniculata* - 9
Flacourtiaceae 10	Arecaceae 23	*Cyathea nigripes* - 8
Sapotaceae 10	Flacourtiaceae 23	*Iriartea deltoidea* - 7
Myristicaceae 10	Sapotaceae 17	Rubiaceae gen.1 sp.1 - 7
Melastomataceae 8	Melastomataceae 15	*Mikania* sp.1 - 6
Annonaceae 8	Lauraceae 15	*Celtis iguanea* - 6
3 families with 7	Meliaceae 12	*Ilex* sp.1 - 6

SITE NO. 134: Jauneche (jauneche)
LOCALITY: Ecuador. Los Ríos: Jauneche Forest, Canton Vinces, between Mocachi and Palenque on Estero Peñafiel.
COORDINATES: 01°06' S, 79°38' W
COLLECTORS: C. Dodson, A. Gentry
VOUCHERS: None
DATES: 24 - 27 March 1980

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 75 m
ANN. RAINFALL: 1,855 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 37.35



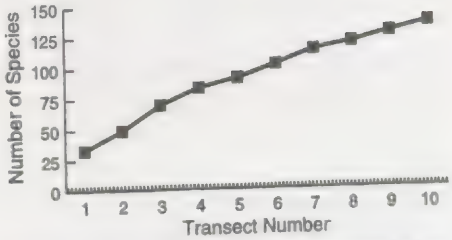
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	50	45	0	95
NUMBER OF INDIVIDUALS	312	126	0	438
NUMBER OF FAMILIES	28	23	0	40
BASAL AREA	2.75	0.13	0	2.88 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 12	Rubiaceae 90	*Faramea occidentalis* - 81
Fabaceae 9	Moraceae 68	*Duguetia peruviana* - 36
Moraceae 7	Bignoniaceae 55	*Pseudolmedia rigida* - 27
Euphorbiaceae 6	Annonaceae 38	*Sorocea sarcocarpa* - 16
Malpighiaceae 4	Euphorbiaceae 27	*Croton schiedeanus* - 16
Sapindaceae 4	Sapindaceae 17	*Clarisia racemosa* - 14
Vitaceae 4	Erythroxylaceae 14	*Erythroxylum pavonii* - 14
Apocynaceae 4	Fabaceae 12	*Paragonia pyramidata* - 12
Arecaceae 3	Nyctaginaceae 10	*Arrabidaea candicans* - 11
Rubiaceae 3	Vitaceae 10	*Talisia setigera* - 10

SITE NO. 135: Maquipucuna (maquipuc)
LOCALITY: Ecuador. Pichincha: Maquipucuna, 5 km E of Nanegal.
COORDINATES: 00°07' N, 78°37' W
COLLECTORS: A. Gentry, B. Boyle, R. Valencia
VOUCHERS: 69901 - 69949, 73116 - 73247
DATES: 9 May 1990, 10 - 11 February 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane wet forest
ELEVATION: 1,630 m
ANN. RAINFALL: 3,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 67.53



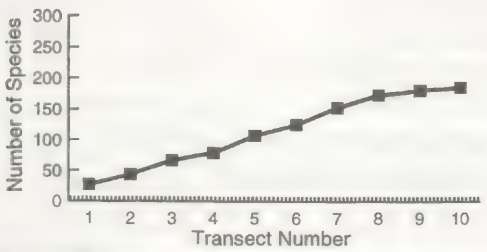
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	94	12	31	137
NUMBER OF INDIVIDUALS	319	33	94	446
NUMBER OF FAMILIES	41	8	11	52
BASAL AREA	5.93	0.034	0.12	6.09 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 14	Rubiaceae 95	*Faramea* sp.1 - 73
Araceae 9	Araceae 54	*Ossaea* sp.1 - 39
Moraceae 8	Melastomataceae 54	*Anthurium cordiforme* - 26
Melastomataceae 7	Lauraceae 23	*Palicourea* sp.1 - 18
Cyatheaceae 7	Ericaceae 17	*Psammisia* cf. *aberrans* - 15
Cyclanthaceae 6	Arecaceae 13	*Anthurium giganteum* - 12
Myrtaceae 6	Bombacaceae 13	*Geissanthus pichinchae* - 11
Rubiaceae 5	Myrsinaceae 13	*Quararibea* sp.1 - 10
5 families with 4	Myristicaceae 12	*Hydrangea peruviana* - 9
	2 families with 10	*Aiphanes* sp.1 - 8

SITE NO. 136: Miazi (miazi)
LOCALITY: Ecuador. Zamora-Chinchipe: Cantón Nangaritza, Miazi, floodplain forest along Río Nangaritza.
COORDINATES: 04°18' S, 78°40' W
COLLECTORS: A. Gentry
VOUCHERS: 80511 - 80725
DATES: 28 - 29 July 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 850 m
ANN. RAINFALL: 2,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 129.17



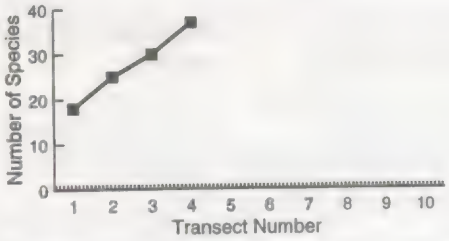
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	138	32	16	186
NUMBER OF INDIVIDUALS	326	51	39	416
NUMBER OF FAMILIES	43	16	9	58
BASAL AREA	4.89	0.083	0.036	5.01 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 16	Bignoniaceae 69	*Memora cladotricha* - 60
Melastomataceae 14	Euphorbiaceae 38	*Ficus* sp.1 - 16
Lauraceae 13	Fabaceae 35	*Mabea* sp.1 - 16
Rubiaceae 12	Melastomataceae 21	*Iriartea* sp.1 - 14
Euphorbiaceae 11	Moraceae 21	*Vochysia* sp.1 - 11
Clusiaceae 8	Rubiaceae 21	*Mabea* sp.2 - 7
Moraceae 6	Arecaceae 20	*Macrolobium* sp.1 - 7
Bignoniaceae 5	Lauraceae 15	cf. *Styrax* sp.1 - 5
10 families with 4	Clusiaceae 14	*Cespedezia* sp.1 - 5
	Vochysiaceae 11	*Cyathea* sp.1 - 5

SITE NO. 137: Pasochoa (pasochoa)
LOCALITY: Ecuador. Pichincha: Pasochoa, ca. 30 km S of Quito, E of Uyumbicho.
COORDINATES: 00°28' S, 78°25' W
COLLECTORS: A. Gentry, J. Miller, D. Neill, P. Keating
VOUCHERS: 54868 - 54889, 60269 - 60296
DATES: 19 July 1986, 1 January 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical montane wet forest
ELEVATION: 3,000 - 3,040 m
ANN. RAINFALL: 1,250 mm *
SOIL DATA: Not available
AREA SAMPLED: 400 m^2
FISHER'S ALPHA: 12.62



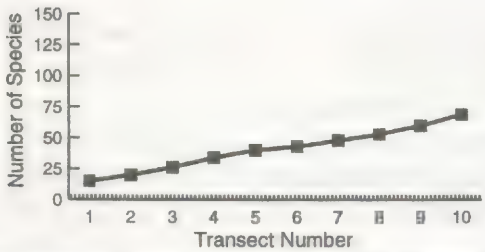
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	22	15	0	37
NUMBER OF INDIVIDUALS	129	95	0	224
NUMBER OF FAMILIES	17	7	0	23
BASAL AREA	1.67	0.09	0	1.76 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Asteraceae 8	Melastomataceae 54	*Miconia theazans* - 50
Melastomataceae 3	Asteraceae 44	*Chusquea scandens* - 27
Aquifoliaceae 2	Poaceae 27	Ericaceae gen.1 sp.1 - 14
Coriariaceae 2	Ericaceae 18	*Ilex* sp.2 - 12
Ericaceae 2	Aquifoliaceae 13	*Oligactis coriacea* - 10
Piperaceae 2	Araliaceae 9	*Oreopanax palamophyllus* - 9
Rubiaceae 2	Coriariaceae 9	Asteraceae gen.1 sp.1 - 9
	Rubiaceae 9	*Mikania* sp.2 - 8
	Chloranthaceae 8	*Hedyosmum luteynii* - 8
	Piperaceae 8	*Cornus peruviana* - 7

SITE NO. 138: Perro Muerto (perromue)
LOCALITY: Ecuador. Manabí: Cuchilla Seca above Estero Perro Muerto, Machalila National Park.
COORDINATES: 01°36' S, 80°42' W
COLLECTORS: A. Gentry, C. Josse
VOUCHERS: 72615 - 72674
DATES: 22 - 23 January 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 450 m
ANN. RAINFALL: 1,550 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 28.95



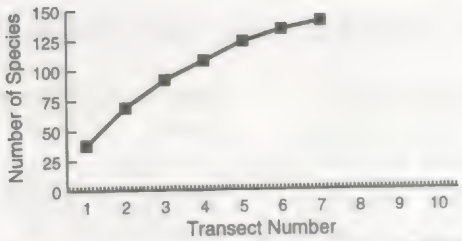
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	50	18	1	69
NUMBER OF INDIVIDUALS	235	49	1	285
NUMBER OF FAMILIES	31	11	1	35
BASAL AREA	3.11	0.067	0.0013	3.18 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 7	Ulmaceae 72	*Ampelocera* sp.1 - 65
Fabaceae 7	Rubiaceae 31	*Simira* cf. *rubescens* - 31
Myrtaceae 5	Erythroxylaceae 20	*Erythroxylum glaucum* - 20
Sapindaceae 3	Sapotaceae 20	*Pouteria glomerata* - 19
16 families with 2	Bignoniaceae 15	*Trichilia moschata* ssp. *moschata* - 9
	Sapindaceae 12	*Eupatorium* sp.1 - 7
	Fabaceae 11	*Celtis iguanea* - 7
	Meliaceae 10	*Allophylus occidentalis* - 6
	Polygonaceae 10	*Anemopaegma chrysanthum* - 6
	Urticaceae 10	*Stigmaphyllon* sp.1 - 6

SITE NO. 139: Río Nangaritza (nangarit)
LOCALITY: Ecuador. Zamora-Chinchipe: Río Nangaritza valley, forest near Shaime.
COORDINATES: 04°18' S, 78°40' W
COLLECTORS: A. Gentry
VOUCHERS: 80801 - 80953A
DATES: 31 July 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical wet forest
ELEVATION: 930 m
ANN. RAINFALL: ca. 5,000 mm
SOIL DATA: Not available
AREA SAMPLED: 700 m^2
FISHER'S ALPHA: 132.95



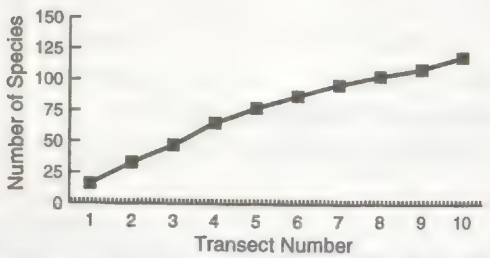
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	104	29	8	141
NUMBER OF INDIVIDUALS	185	42	24	251
NUMBER OF FAMILIES	38	15	6	50
BASAL AREA	4.10	0.12	0.058	4.28 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 12	Meliaceae 17	*Licania* sp.1 - 8
Rubiaceae 9	Rubiaceae 16	*Hippotis* sp. 1 - 8
Meliaceae 8	Fabaceae 15	*Grias* sp.1 - 8
Melastomataceae 7	Euphorbiaceae 15	*Polybotrya* sp.1 - 7
Sapindaceae 7	Melastomataceae 13	*Philodendron* sp.1 - 7
Moraceae 6	Chrysobalanaceae 12	*Caryodendron* sp.1 - 6
Myristicaceae 6	Apocynaceae 11	*Lundia* sp.1 - 5
6 families with 4	Bignoniaceae 11	*Drypetes* sp.1 - 5
	Moraceae 11	*Bonafousia* sp.1 - 5
	4 families with 8	*Guarea pterorachis* - 5

SITE NO. 140: Río Palenque 1 (riopal1)
LOCALITY: Ecuador. Guyas: Río Palenque Science Center, 47 km S of Santo Domingo de los Colorados 56 km N of Quevedo on the Quito-Guayaquil highway.
COORDINATES: 00°34' S, 79°20' W
COLLECTORS: C. Dodson, A. Gentry
VOUCHERS: 9630 - 10097
DATES: 18 March 1980

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 200 m
ANN. RAINFALL: 2,650 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 72.91



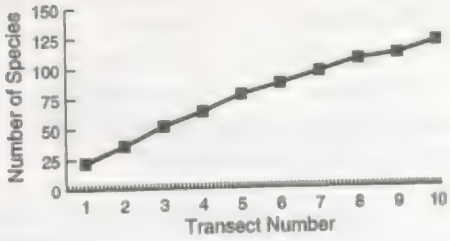
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	93	15	11	119
NUMBER OF INDIVIDUALS	237	41	22	300
NUMBER OF FAMILIES	47	9	8	55
BASAL AREA	2.64	0.049	0.016	2.71 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 8	Arecaceae 43	*Catoblastus velutinus* - 36
Moraceae 8	Musaceae 20	*Acalypha obovata* - 13
Arecaceae 6	Bombacaceae 20	*Quararibea coloradorum* - 12
Rubiaceae 6	Moraceae 20	*Heliconia curtispatha* - 10
Piperaceae 5	Euphorbiaceae 16	*Heliconia riopalenquensis* - 10
Meliaceae 4	Fabaceae 14	*Lomariopsis japurensis* - 7
Solanaceae 4	Solanaceae 13	*Mikania leiostachya* - 6
Bignoniaceae 4	Cecropiaceae 10	*Solanum palenquense* - 6
Euphorbiaceae 4	Bignoniaceae 9	*Pourouma aspera* - 6
9 families with 3	Myristicaceae 9	*Quararibea grandifolia* - 6

SITE NO. 141: Río Palenque 2 (riopal2)
LOCALITY: Ecuador. Guayas: Río Palenque Science Center, 47 km S of Santo Domingo de los Colorados, 56 km N of Quevedo on the Quito-Guayaquil highway.
COORDINATES: 00°34' S, 79°20' W
COLLECTORS: C. Dodson, A. Gentry
VOUCHERS: None
DATES: 18 March 1980

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 150 - 220 m
ANN. RAINFALL: 2,650 mm
SOIL DATA: Clinebell et al. 1995 (equivalent to Río Palenque 1)
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 69.47



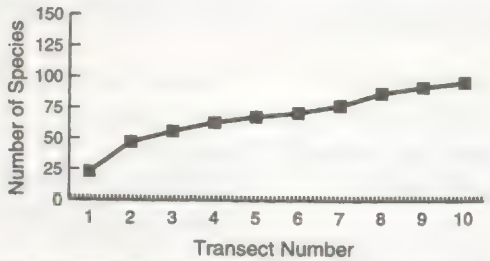
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	98	18	5	121
NUMBER OF INDIVIDUALS	285	35	7	327
NUMBER OF FAMILIES	38	11	3	45
BASAL AREA	3.98	0.06	0.01	4.05 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Moraceae 9	Arecaceae 61	*Catoblastus velutimus* - 49
Fabaceae 8	Fabaceae 20	*Virola sebifera* - 9
Lauraceae 7	Bombacaceae 19	*Quararibea grandifolium* - 9
Arecaceae 6	Myristicaceae 19	*Inga coruscans* - 9
Meliaceae 6	Moraceae 18	*Quararibea coloradorum* - 8
Solanaceae 5	Meliaceae 15	*Cephaelis gentryi* - 8
Bignoniaceae 5	Rubiaceae 14	*Synechanthus warscewiczianus* - 8
Myristicaceae 5	Musaceae 12	*Heliconia curtispatha* - 7
Piperaceae 5	Bignoniaceae 10	*Bambusa guadua* - 6
4 families with 4	Clusiaceae 10	*Tovomita weddeliana* - 6

SITE NO. 142: San Sebastián (sansebas)
LOCALITY: Ecuador. Manabí: Machalilla National Park, San Sebastián, 8 - 9 km SE of Agua Blanca.
COORDINATES: 01°36' S, 80°42' W
COLLECTORS: A. Gentry, C. Josse
VOUCHERS: 72430 - 72555
DATES: 20 - 21 January 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 550 m
ANN. RAINFALL: 2,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 38.90



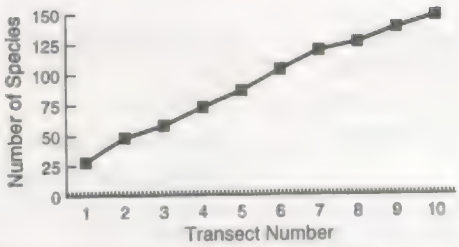
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	69	19	8	96
NUMBER OF INDIVIDUALS	322	68	30	420
NUMBER OF FAMILIES	39	16	6	49
BASAL AREA	4.30	0.083	0.27	4.66 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 6	Arecaceae 40	*Chamaedorea poeppigiana* - 26
Fabaceae 5	Lauraceae 35	*Palicourea* sp.1 - 25
Araceae 4	Rubiaceae 35	*Quararibea grandifolia* - 19
Arecaceae 4	Sapindaceae 32	*Aegiphila alba* - 16
Asteraceae 4	Araceae 26	*Philodendron* cf. *purpureoviri* - 16
Meliaceae 4	Bombacaceae 19	*Ocotea* sp.1 - 15
Sapindaceae 4	Asteraceae 18	*Cupania* sp.1 - 13
Rubiaceae 4	Verbenaceae 17	*Eupatorium* sp.1 - 12
5 families with 3	Fabaceae 15	*Grias peruviana* - 12
	Moraceae 14	*Beilschmiedia* sp.1 - 11

SITE NO. 143: Saul (saul)
LOCALITY: French Guiana. Saint-Laurent-du-Maroni: Saul.
COORDINATES: 03°38' N, 53°12' W
COLLECTORS: A. Gentry, S. Mori, S. Beck, J.J. de Granville
VOUCHERS: 62955 - 63132
DATES: 20 - 22 June 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 300 m
ANN. RAINFALL: 2,358 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 106.87



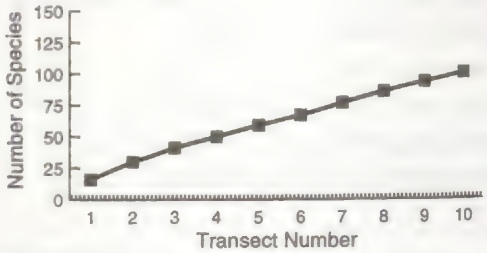
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	120	25	4	149
NUMBER OF INDIVIDUALS	276	42	6	324
NUMBER OF FAMILIES	34	14	3	46
BASAL AREA	5.78	0.065	0.0072	5.86 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 20	Fabaceae 44	*Diospyros mathewsiana* - 19
Lauraceae 10	Lecythidaceae 27	*Eschweilera coriacea* - 15
Burseraceae 9	Meliaceae 23	*Guarea kunthiana* - 13
Lecythidaceae 8	Burseraceae 20	*Quiina guianensis* - 10
Moraceae 8	Ebenaceae 19	*Bonafousia disticha* - 9
Sapindaceae 6	Apocynaceae 17	*Lonchocarpus* sp.1 - 8
Apocynaceae 6	Quiinaceae 14	*Inga auristellae* - 7
Bignoniaceae 6	Clusiaceae 13	*Caraipa procera* - 7
4 species with 5	Lauraceae 13	*Protium opacum* ssp. *rabelianum* - 6
	2 families with 12	3 species with 5

SITE NO. 144: Berbice River (berbicer)
LOCALITY: Guyana. Kwakwani Region: Berbice River.
COORDINATES: 05°30' N, 58°05' W
COLLECTORS: G. Aymard, F. Dallmeier, J. Comiskey
VOUCHERS: 9430 - 9744
DATES: 2 - 26 April 1993

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 160 m
ANN. RAINFALL: 2,200 mm
SOIL DATA: Mix of sand and clay with high porosity and drainage.
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 60.87



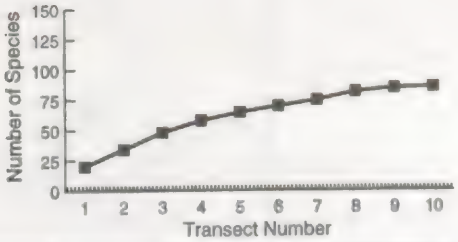
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	90	11	0	101
NUMBER OF INDIVIDUALS	218	41	0	259
NUMBER OF FAMILIES	32	5	0	34
BASAL AREA	5.96	0.19	0	6.15 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 14	Apocynaceae 39	*Aspidosperma* sp.1 - 33
Indet. 11	Fabaceae 29	Myrtaceae gen.1 sp.1 - 18
Lauraceae 8	Indet. 29	*Swartzia* sp.1 - 14
Moraceae 7	Myrtaceae 18	*Doliocarpus* sp.1 - 14
Rubiaceae 7	Dilleniaceae 16	Olacaceae gen.1 sp.1 - 11
Chrysobalanaceae 5	Lauraceae 14	*Duguetia* sp.1 - 10
Annonaceae 4	Annonaceae 13	Indet. gen.4 sp.1 - 10
Clusiaceae 4	Olacaceae 11	*Eschweilera* sp.1 - 7
Melastomataceae 4	Melastomataceae 10	Lauraceae gen.4 sp.1 - 6
3 families with 3	2 families with 9	3 species with 5

SITE NO. 145: Río Jejuimi (jejuemi)
LOCALITY: Paraguay. Canindeyu: Terreno de Banco Mundial, 34 km E of Villa Ygatimi near Río Jejuimi.
COORDINATES: 24°08' S, 55°32' W
COLLECTORS: A. Gentry, S. Keel, V. Vera, J. Dávalos
VOUCHERS: 59295 - 59402
DATES: 24 - 25 September 1987

ECOLOGICAL AND FLORISTIC DATA

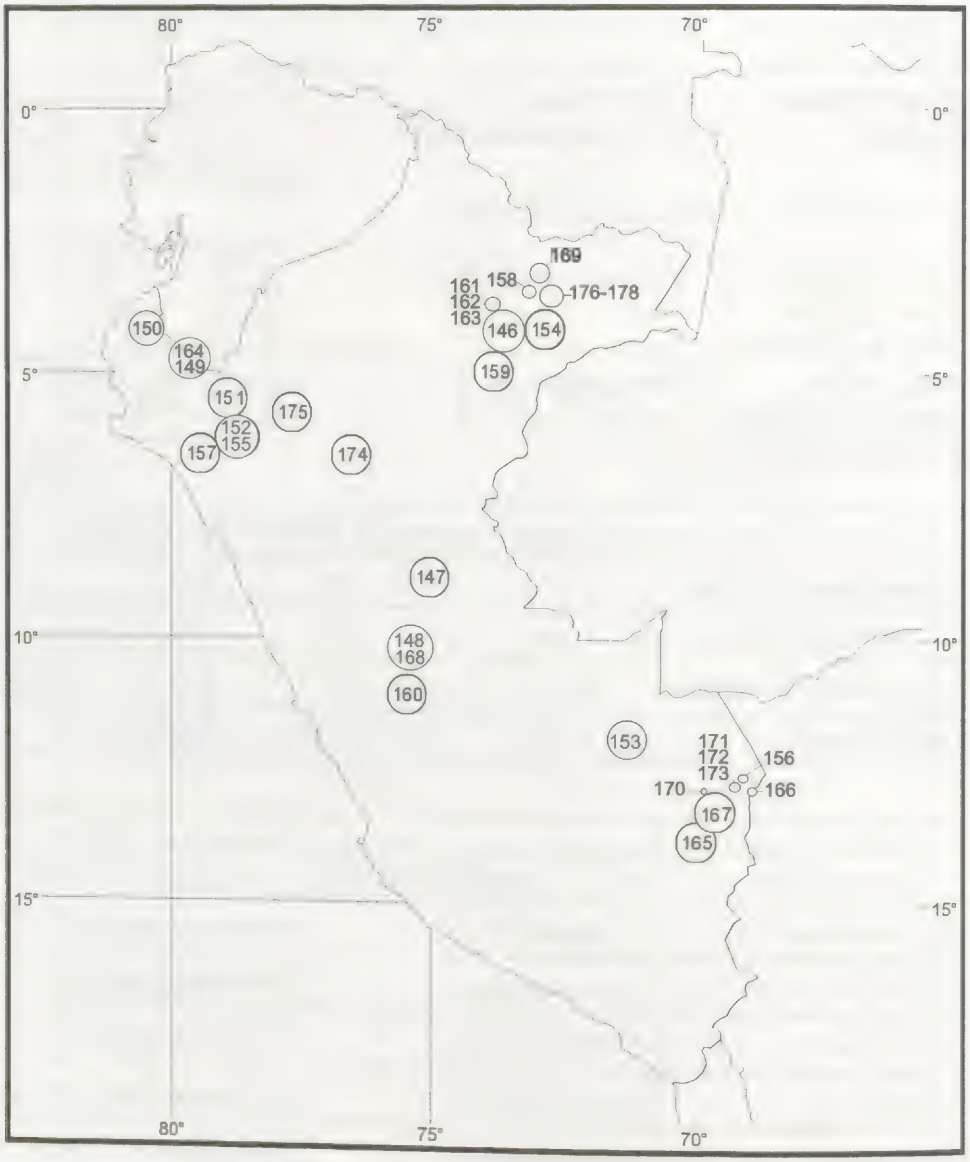
LIFE ZONE: Subtropical moist forest
ELEVATION: 150 m
ANN. RAINFALL: 1,800 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 34.13



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	52	33	1	86
NUMBER OF INDIVIDUALS	276	113	1	390
NUMBER OF FAMILIES	20	16	1	33
BASAL AREA	4.91	0.27	0.001	5.18 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 13	Moraceae 72	*Sorocea bonplandii* - 71
Myrtaceae 11	Bignoniaceae 51	*Hennecartia omphalandra* - 24
Meliaceae 7	Meliaceae 42	*Guarea kunthiana* - 17
Rutaceae 6	Myrtaceae 27	*Adenocalymna marginatum* - 14
Fabaceae 5	Monimiaceae 24	*Actinostemon concolor* - 13
Sapindaceae 5	Celastraceae 22	Celastraceae gen.1 sp.1 - 12
Celastraceae 4	Euphorbiaceae 22	*Endlicheria paniculata* - 11
Euphorbiaceae 4	Rutaceae 19	*Chrysophyllum gonocarpum* - 9
Apocynaceae 3	Fabaceae 18	*Cecropia pachystachya* - 9
4 families with 2	Lauraceae 13	5 species with 8

3D. Peru, sites 146–178.

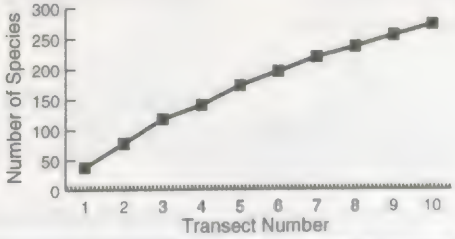


146 – Allpahuayo, Peru
147 – Bosque Nacional von Humboldt, Peru
148 – Cabeza de Mono, Peru
149 – Cerro Aypate, Peru
150 – Cerros de Amotape, Peru
151 – Chirinos, Peru
152 – Chorro Blanco, Peru
153 – Cochacashu, Peru
154 – Constancia, Peru
155 – Cutervo Nacional Park, Peru
156 – Cuzco Amazónico, Peru
157 – El Pargo, Peru
158 – Indiana, Peru
159 – Jenaro Herrera, Peru
160 – La Genoa, Peru
161 – Mishana Tahuampa, Peru
162 – Mishana Old Floodplain, Peru
163 – Mishana White Sand, Peru
164 – Montaña de Cuyas, Peru
165 – Río Candamo, Peru
166 – Pampas del Heath, Peru
167 – Río Távara, Peru
168 – Shiringamazu, Peru
169 – Quebrada Sucusari 1, Peru
170 – Tambopata Upland Sandy, Peru
171 – Tambopata Alluvial, Peru
172 – Tambopata Swamp Trail, Peru
173 – Tambopata Lateritic, Peru
174 – Tarapoto, Peru
175 – Venceremos, Peru
176 – Yanamono Tahuampa, Peru
177 – Yanamono 1, Peru
178 – Yanamono 2, Peru

SITE NO. 146: Allpahuayo (allpahua)
LOCALITY: Peru. Loreto: Allpahuayo, Km 20 Iquitos-Nauta road, ca. 35 km SW of Iquitos.
COORDINATES: 03°57' S, 73°25' W
COLLECTORS: A. Gentry, R. Vásquez, C. Grández, N. Jaramillo, C. Blaney, R. Zambrano
VOUCHERS: 56028 - 56100, 61852 - 61954, 65558 - 65892, Vasquez 16939 - 16957
DATES: February 1987, 1988, 1989, 5 July 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 130 - 180 m
ANN. RAINFALL: ca. 3,000 mm
SOIL DATA: Clinebell et al. 1995*
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 386.08



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	208	56	11	275
NUMBER OF INDIVIDUALS	303	87	11	401
NUMBER OF FAMILIES	43	21	4	56
BASAL AREA	5.95	0.21	0.029	6.19 m^2

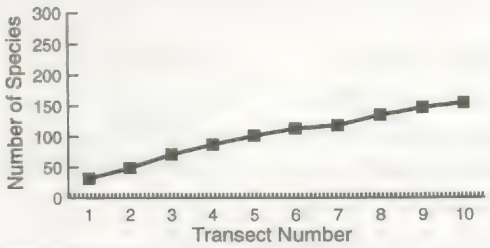
DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 40	Fabaceae 52	*Scheelea plowmannii* - 15
Moraceae 16	Arecaceae 37	*Nealchornea japurensis* - 8
Annonaceae 13	Sapotaceae 19	*Machaerium cuspidatum* - 6
Sapotaceae 12	Moraceae 19	*Pouteria* sp.4 - 5
Arecaceae 11	Euphorbiaceae 17	*Eschweilera tessmannii* - 5
Sapindaceae 11	Meliaceae 15	*Tetracera volubilis* - 5
Burseraceae 10	Bignoniaceae 15	*Cordia nodosa* - 5
Euphorbiaceae 10	Burseraceae 14	*Combretum* sp.1 - 5
3 families with 9	Sapindaceae 14	*Rinorea viridifolia* - 5
	2 families with 13	*Phytelephas* sp.1 - 5

*Where *Allpahuayo* and *Jenaro Herrera* soil data were transposed.

SITE NO. 147: Bosque Nacional von Humboldt (humboldt)
LOCALITY: Peru. Ucayali: Bosque Nacional von Humboldt, Coronel Portillo, Km 86 Pucallpa-Tingo María road.
COORDINATES: 08°50' S, 75°00' W
COLLECTORS: A. Gentry, K. Young, S. Libenson, M. Olson
VOUCHERS: 31250 - 31299, 36182 - 36340
DATES: 13 February 1981, 11 - 13 March 1982

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 270 m
ANN. RAINFALL: ca. 2,500 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 98.41



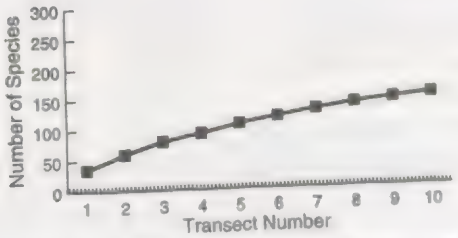
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	118	36	1	155
NUMBER OF INDIVIDUALS	303	73	1	377
NUMBER OF FAMILIES	36	14	1	45
BASAL AREA	2.65	0.10	0.0005	2.75 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 17	Fabaceae 48	*Oenocarpus bataua* - 34
Bignoniaceae 12	Arecaceae 41	Fabaceae gen.1 sp.1 - 17
Annonaceae 8	Chrysobalanaceae 27	*Pseudolmedia laevigata* - 12
Chrysobalanaceae 8	Annonaceae 23	*Guatteria* sp.1 - 10
Lauraceae 8	Bignoniaceae 23	*Virola calophylla* - 9
Arecaceae 7	Myristicaceae 23	*Siparuna decipiens* - 8
Moraceae 7	Moraceae 20	*Hirtella racemosa* - 8
Meliaceae 6	Monimiaceae 19	*Iryanthera laevis* - 7
Apocynaceae 6	Meliaceae 15	Lauraceae gen.1 sp.1 - 7
3 species with 5	Lauraceae 15	Chrysobalanaceae gen.1 sp.1 - 7

SITE NO. 148: Cabeza de Mono (cabezade)
LOCALITY: Peru. Pasco: Oxapampa, Cabeza de Mono, Río Iscozacin, 10 km SW of Iscozacin, Palcazu Valley, mature forest on sandy river terrace.
COORDINATES: 10°20' S, 75°18' W
COLLECTORS: A. Gentry, D. Smith, N. Jaramillo
VOUCHERS: 41750 - 41980
DATES: 10 - 13 June 1983

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical wet forest
ELEVATION: 320 m
ANN. RAINFALL: 4,000 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 112.05



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	123	25	4	152
NUMBER OF INDIVIDUALS	267	51	5	323
NUMBER OF FAMILIES	35	11	4	44
BASAL AREA	2.22	0.11	0.0064	2.34 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 18	Fabaceae 40	*Socratea exorrhiza* - 19
Sapotaceae 14	Myristicaceae 28	*Guarea macrophylla* ssp. *pachycarpa*- 15
Lauraceae 10	Meliaceae 27	*Virola sebifera* - 9
Myristicaceae 8	Sapotaceae 27	*Caraipa* sp.1 - 8
Meliaceae 7	Arecaceae 26	*Machaerium* sp.1 - 8
Bignoniaceae 7	Burseraceae 17	*Pouteria* sp.1 - 7
Euphorbiaceae 7	Lauraceae 16	*Wettinia* sp.1 - 6
Burseraceae 6	Clusiaceae 15	*Protium* cf. *trifoliolatum* - 6
Clusiaceae 6	Euphorbiaceae 15	*Cheiloclinium hippocrateoides* - 6
Lecythidaceae 6	Bignoniaceae 12	4 species with 5

SITE NO. 149: Cerro Aypate (cerroayp)
LOCALITY: Peru. Piura: Cerro Aypate, 49 km E of Ayabaca.
COORDINATES: 04°35' S, 79°32' W
COLLECTORS: A. Gentry, C. Díaz, R. Ortiz
VOUCHERS: 74949 - 75017
DATES: 22 - 23 September 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical montane wet forest
ELEVATION: 2,770 m
ANN. RAINFALL: 1,800 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 17.92

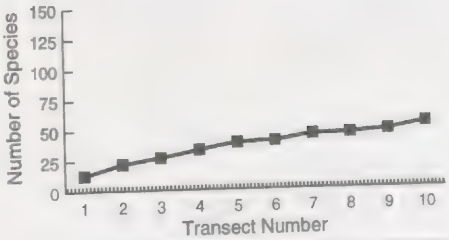
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	41	13	2	56
NUMBER OF INDIVIDUALS	350	37	3	390
NUMBER OF FAMILIES	20	10	2	29
BASAL AREA	5.87	0.041	0.0082	5.92 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Solanaceae 9	Solanaceae 97	*Brugmansia* sp.1 - 62
Asteraceae 6	Melastomataceae 54	*Miconia* sp.1 - 47
Myrtaceae 6	Myrtaceae 48	*Hedyosmum scabrum* - 41
Lauraceae 5	Chloranthaceae 41	*Geissanthus lepidotus* - 22
Melastomataceae 3	Myrsinaceae 30	*Solanum* sp.1 - 21
Asclepiadaceae 2	Asteraceae 16	Myrtaceae gen.1 sp.1 - 16
Myrsinaceae 2	Lauraceae 16	*Meliosma* sp.1 - 13
Piperaceae 2	Sabiaceae 13	*Psidium* sp.1 - 13
	Piperaceae 11	*Persea subcordata* - 10
	Onagraceae 9	2 species with 9

SITE NO. 150: Cerros de Amotape (amotape)
LOCALITY: Peru. Tumbes: Cerros de Amotape, Quebrada Los Conejos ca. 25 km SE of Cherrelique.
COORDINATES: 04°09' S, 80°37' W
COLLECTORS: A. Gentry, C. Díaz
VOUCHERS: 58238 - 58296
DATES: 9 - 10 June 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane moist forest
ELEVATION: 820 m
ANN. RAINFALL: Not available
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 16.91



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	40	12	2	54
NUMBER OF INDIVIDUALS	357	34	4	395
NUMBER OF FAMILIES	22	9	2	28
BASAL AREA	3.37	0.069	0.0132	3.45 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 7	Rubiaceae 174	*Simira* sp.1 - 171
Bignoniaceae 5	Oleaceae 26	*Chionanthus* cf. *elegans* - 26
Asteraceae 3	Flacourtiaceae 21	*Zanthoxylum tumbezamum* - 19
Boraginaceae 3	Rutaceae 21	Verbenaceae gen.1 sp.1 - 16
Flacourtiaceae 3	Fabaceae 19	*Cissus* cf. *allenii* - 14
Rutaceae 3	Euphorbiaceae 16	*Casearia obovalis* - 13
8 families with 2	Verbenaceae 16	*Cedrela fissilis* - 12
	Vitaceae 15	*Margaritaria nobilis* - 12
	Meliaceae 12	*Machaerium millei* - 11
	Bignoniaceae 9	*Terminalia valverdae* - 7

SITE NO. 151: Chirinos (chirinos)
LOCALITY: Peru. Cajamarca: La Palma, 10 km NW of Chirinos.
COORDINATES: 05°25' S, 78°53' W
COLLECTORS: A. Gentry, C. Díaz
VOUCHERS: 61108 - 61265
DATES: 4 - 5 February 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane moist forest
ELEVATION: 1,780 m
ANN. RAINFALL: 1,400 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 46.38

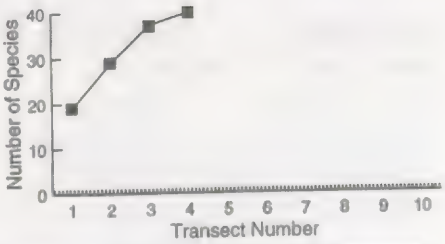
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	80	18	3	101
NUMBER OF INDIVIDUALS	317	42	4	363
NUMBER OF FAMILIES	32	11	2	40
BASAL AREA	7.38	0.049	0.0022	7.43 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 17	Rubiaceae 86	*Casearia prunifolia* - 37
Rubiaceae 10	Lauraceae 49	*Psychotria* sp.4 - 22
Asteraceae 6	Flacourtiaceae 40	*Psychotria* sp.1 - 16
Araliaceae 4	Asteraceae 20	*Condaminea corymbosa* - 16
Euphorbiaceae 4	Cyatheaceae 19	*Faramea* sp.1 - 13
Flacourtiaceae 3	Myrtaceae 19	*Cyathea* sp.1 - 13
Apocynaceae 3	Staphyleaceae 13	*Beilschmiedia* sp.1 - 13
Cyatheaceae 3	Euphorbiaceae 12	*Eugenia* aff. *florida* - 10
Myrtaceae 3	Bignoniaceae 9	*Pollalesta discolor* - 10
Podocarpaceae 3	Podocarpaceae 7	3 species with 9

SITE NO. 152: Chorro Blanco (chorrobl)
LOCALITY: Peru. Cajamarca: Chorro Blanco, Cutervo National Park, ca. 15 km N of San Andrés.
COORDINATES: 06°10' S, 78°45' W
COLLECTORS: A. Gentry, C. Díaz, R. Ortiz
VOUCHERS: 74784 - 74826
DATES: 14 September 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane moist forest
ELEVATION: 2,380 m
ANN. RAINFALL: 1,400 mm *
SOIL DATA: Not available
AREA SAMPLED: 400 m^2
FISHER'S ALPHA: 17.05



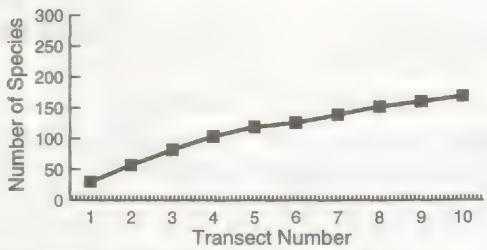
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	35	5	0	40
NUMBER OF INDIVIDUALS	137	24	0	161
NUMBER OF FAMILIES	17	4	0	20
BASAL AREA	1.99	0.024	0	2.02 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 9	Melastomataceae 31	Ericaceae gen.1 sp.1 - 15
Melastomataceae 6	Ericaceae 18	*Clusia* aff. *minor* - 12
Euphorbiaceae 3	Lauraceae 17	*Cyathea caracasana* - 12
Rubiaceae 3	Euphorbiaceae 15	*Miconia* sp.1 - 12
Asteraceae 2	Clusiaceae 12	*Hyeronima oblonga* - 10
Ericaceae 2	Cyatheaceae 12	*Weinmannia* sp.1 - 10
Theaceae 2	Asteraceae 11	*Aequatorium caramarcense* - 9
	Rubiaceae 11	Melastomataceae gen.2 sp.1 - 7
	Cunoniaceae 10	*Palicourea* sp.1 - 7
	Piperaceae 5	*Miconia* sp.2 - 6

SITE NO. 153: Cocha Cashu (cochacas)
LOCALITY: Peru. Madre de Dios: Cocha Cashu Camp, Río Manu, Parque Nacional de Manu, mature floodplain forest.
COORDINATES: 11°51' S, 71°19' W
COLLECTORS: A. Gentry, J. Aronson, R. Ramírez
VOUCHERS: 26804 - 27059
DATES: 17 - 20 October 1979

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane moist forest
ELEVATION: 380 m
ANN. RAINFALL: 2,000 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 125.92



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	124	44	1	169
NUMBER OF INDIVIDUALS	280	75	1	356
NUMBER OF FAMILIES	40	19	1	49
BASAL AREA	4.00	0.09	0.038	4.12 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Annonaceae 15	Meliaceae 37	*Rinorea viridifolia* - 28
Fabaceae 13	Violaceae 37	*Quararibea wittii* - 18
Bignoniaceae 12	Annonaceae 35	*Leonia glycicarpa* - 9
Meliaceae 11	Bignoniaceae 25	*Guarea macrophylla* ssp. *pachycarpa*- 8
Sapotaceae 9	Arecaceae 20	*Guarea kunthiana* - 7
Moraceae 7	Fabaceae 20	*Scheelea insignis* - 6
Lauraceae 6	Bombacaceae 20	*Astrocaryum* sp.1 - 6
4 families with 5	Sapotaceae 12	*Oxandra acuminata* - 6
	Moraceae 12	*Lunania parviflora* - 6
	Flacourtiaceae 11	6 species with 5

SITE NO. 154: Constancia (constanc)
LOCALITY: Peru. Loreto: Constancia, Quebrada Tamshiyacu.
COORDINATES: 04°15' S, 72°45' W
COLLECTORS: A. Gentry, R. Ortiz, C. Grández, N. Jaramillo, M. Flores
VOUCHERS: 76382 - 76569, Grández 4210 - 4314
DATES: 29 - 31 March 1992, 9 July 1992

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 160 m
ANN. RAINFALL: ca. 3,100 mm
SOIL DATA: Not available (white clay)
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 276.02

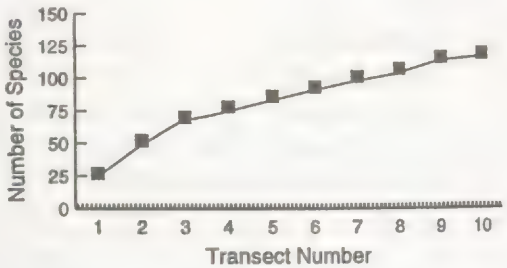
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	195	34	4	233
NUMBER OF INDIVIDUALS	309	53	4	366
NUMBER OF FAMILIES	46	14	2	57
BASAL AREA	4.64	0.09	0.008	4.74 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 20	Myristicaceae 29	*Miconia* sp.1 - 9
Myristicaceae 13	Fabaceae 26	*Protium* sp.1 - 9
Burseraceae 12	Burseraceae 23	*Virola calophylla* - 8
Moraceae 12	Arecaceae 21	*Ampelozizyphus* sp.1 - 8
Arecaceae 10	Melastomataceae 19	*Connarus fasciculatus* - 7
Elaeocarpaceae 9	Euphorbiaceae 17	*Eschweilera* sp.2 - 6
Melastomataceae 8	Lecythidaceae 16	*Oenocarpus bataua* - 6
Chrysobalanaceae 8	Chrysobalanaceae 13	Rutaceae gen.1 sp.1 - 5
Euphorbiaceae 8	Connaraceae 12	8 species with 4
Lecythidaceae 8	Moraceae 12	

SITE NO. 155: Cutervo Nacional Park (cutervo)
LOCALITY: Peru. Cajamarca: Lower edge of Cutervo National Park, 12 km NE of San Andrés de Cutervo.
COORDINATES: 06°10' S, 78°40' W
COLLECTORS: A. Gentry, C. Díaz, C. Blaney, R. Ortiz
VOUCHERS: 61492A - 61567, 74619 - 74881
DATES: 11 - 12 February 1988, 10 - 16 September 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane moist forest
ELEVATION: 2,200 - 2,250 m
ANN. RAINFALL: 1,400 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 53.04



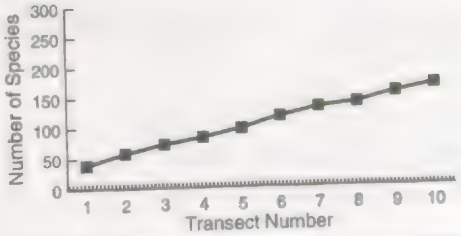
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	100	11	8	119
NUMBER OF INDIVIDUALS	359	52	36	447
NUMBER OF FAMILIES	37	7	5	45
BASAL AREA	6.20	0.075	0.34	6.62 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 19	Arecaceae 52	*Prestoea acuminata* - 49
Rubiaceae 12	Melastomataceae 49	*Miconia* sp.1 - 29
Melastomataceae 10	Lauraceae 46	*Philodendron ruizii* - 20
Euphorbiaceae 5	Rubiaceae 43	*Cyathea delgadii* - 14
Araceae 4	Araceae 31	Ericaceae gen.2 sp.1 - 13
Asteraceae 4	Cyatheaceae 20	*Palicourea* sp.1 - 13
Cunoniaceae 4	Myrtaceae 20	*Myrcia* sp.1 - 12
Myrtaceae 4	Ericaceae 19	*Ruyschia pavonii* - 10
Piperaceae 4	Asteraceae 18	*Piper* sp.2 - 9
5 families with 3	Piperaceae 17	*Dicksonia sellowiana* - 9

SITE NO. 156: Cuzco Amazónico (cuzcoam)
LOCALITY: Peru. Madre de Dios: Tambopata, Cuzco Amazónico, Río Madre de Dios. Below Puerto Maldonado.
COORDINATES: 12°35' S, 69°09' W
COLLECTORS: A. Gentry, P. Núñez
VOUCHERS: 65900 - 66002, 68722 - 68790, 69313 - 69330
DATES: 19 February 1989, 14 December 1989, 19 February 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane wet forest
ELEVATION: 200 m
ANN. RAINFALL: 2,350 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 123.85



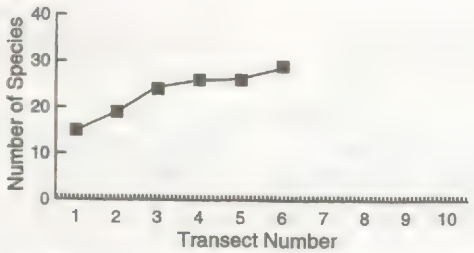
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	131	32	5	168
NUMBER OF INDIVIDUALS	289	57	11	357
NUMBER OF FAMILIES	41	12	5	51
BASAL AREA	5.06	0.15	0.0073	5.21 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 17	Arecaceae 47	*Iriartea deltoidea* - 24
Annonaceae 12	Moraceae 35	*Pausandra trianae* - 19
Bignoniaceae 12	Bignoniaceae 33	*Rinorea viridifolia* - 16
Moraceae 11	Violaceae 27	*Clytostoma uleanum* - 15
Arecaceae 10	Annonaceae 22	*Pseudolmedia laevis* - 13
Sapotaceae 9	Euphorbiaceae 21	*Euterpe precatoria* - 9
Lauraceae 8	Fabaceae 20	*Poulsenia armata* - 8
Flacourtiaceae 6	Piperaceae 16	*Piper* sp.1 - 7
Sapindaceae 6	Meliaceae 13	3 species with 6
2 families with 5	3 families with 10	

SITE NO. 157: El Pargo (elpargo)
LOCALITY: Peru. Cajamarca: El Pargo, 42 km E of Llama, ca. 14 km SE of Tunas.
COORDINATES: 06°30' S, 79°31' W
COLLECTORS: A. Gentry, C. Díaz, R. Ortiz
VOUCHERS: 74529 - 74560, 74890 - 74894
DATES: 7 - 9 September 1991, 18 September 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical montane wet forest
ELEVATION: 3,000 m
ANN. RAINFALL: 1,075 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 600 m^2
FISHER'S ALPHA: 10.78



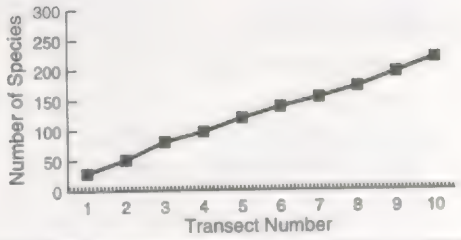
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	24	5	0	29
NUMBER OF INDIVIDUALS	138	10	0	148
NUMBER OF FAMILIES	16	2	0	17
BASAL AREA	1.48	0.0098	0	1.49 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Asteraceae 7	Asteraceae 43	*Gynoxys* sp.1 - 21
Melastomataceae 3	Clusiaceae 18	*Clusia* aff. *multiflora* - 18
Lauraceae 2	Melastomataceae 17	*Siparuna* sp.1 - 10
Myrsinaceae 2	Monimiaceae 10	*Grosvenoria coelocaulis* - 10
Proteaceae 2	Proteaceae 10	*Miconia* sp.1 - 10
Rosaceae 2	Lauraceae 9	*Lomatia* sp.1 - 9
	Myrsinaceae 9	*Gaiadendron punctatum* - 8
	Loranthaceae 8	*Myrsine dependens* - 7
	Araliaceae 5	*Jungia paniculata* - 6
	Myricaceae 5	*Tibouchina* sp.1 - 6

SITE NO. 158: Indiana (indiana)
LOCALITY: Peru. Loreto: Provincia Maynas, Explorama Inn, ca. 2 km W of Indiana on Río Amazonas.
COORDINATES: 03°31' S, 73°04' W
COLLECTORS: A. Gentry, R. Vásquez, N. Jaramillo
VOUCHERS: 55621 - 55900
DATES: 12 - 14 February 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 130 m
ANN. RAINFALL: ca. 3,100 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 210.45



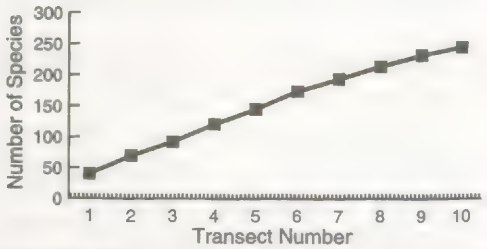
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	166	54	1	221
NUMBER OF INDIVIDUALS	296	93	2	391
NUMBER OF FAMILIES	48	26	1	63
BASAL AREA	5.35	0.18	0.0046	5.53 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 21	Fabaceae 46	*Casearia fasciculata* - 24
Moraceae 16	Flacourtiaceae 29	*Astrocaryum murumuru* - 9
Myrtaceae 11	Euphorbiaceae 24	*Rinorea* sp.1 - 9
Euphorbiaceae 10	Moraceae 21	*Brownea* sp.1 - 8
Sapindaceae 9	Myristicaceae 20	*Lonchocarpus* sp.1 - 8
Annonaceae 9	Violaceae 19	*Pausandra trianae* - 7
Myristicaceae 9	Bignoniaceae 17	*Rinorea lindeniana* - 7
4 families with 8	Arecaceae 15	*Hiraea* sp.1 - 6
	Rubiaceae 14	*Otoba parvifolia* - 6
	2 families with 13	*Senefeldera triandra* - 6

SITE NO. 159: Jenaro Herrera (jenarohe)
LOCALITY: Peru. Loreto: Provincia Requena, Jenaro Herrera, Río Ucayali.
COORDINATES: 04°55' S, 73°45' W
COLLECTORS: A. Gentry, R. Vásquez, N. Jaramillo, F. Watson, J. Valcázar
VOUCHERS: 56280 - 56646
DATES: 22 - 24 February 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 130 m
ANN. RAINFALL: 2,520 mm
SOIL DATA: Clinebell et al. 1995*
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 258.51



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	206	40	0	246
NUMBER OF INDIVIDUALS	347	64	0	411
NUMBER OF FAMILIES	47	22	0	61
BASAL AREA	3.72	0.29	0	4.01 m²

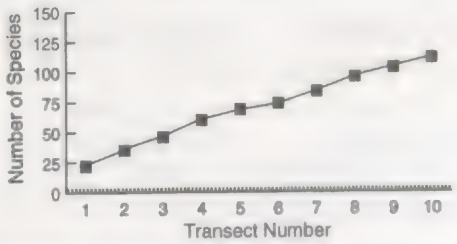
DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 22	Arecaceae 34	*Lepidocaryum gracile* - 15
Sapotaceae 21	Fabaceae 34	*Guarea macrophylla* ssp. *tuberculata*- 6
Lauraceae 17	Sapotaceae 30	*Geonoma* sp.1 - 6
Burseraceae 15	Burseraceae 27	*Eschweilera* sp.1 - 6
Chrysobalanaceae 12	Lecythidaceae 22	Fabaceae gen.1 sp.1 - 5
Lecythidaceae 12	Chrysobalanaceae 19	*Leonia cymosa* - 5
Melastomataceae 10	Lauraceae 19	*Attalea spectabilis* - 5
Annonaceae 10	Myristicaceae 18	9 species with 4
Moraceae 10	Melastomataceae 16	
2 families with 8	Meliaceae 16	

*Where *Jenaro Herrera* and *Allpahuayo* soil data were transposed.

SITE NO. 160: La Genoa (lagenoa)
LOCALITY: Peru. Junín: Chanchamayo, Hacienda La Genoa, Finca Italia.
COORDINATES: 11°05' S, 75°25' W
COLLECTORS: A. Gentry, C. Díaz, graduate field course of San Marcos University
VOUCHERS: 73318 - 73445
DATES: 4 - 5 March 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane moist forest
ELEVATION: 1,140 m
ANN. RAINFALL: 2,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 57.60



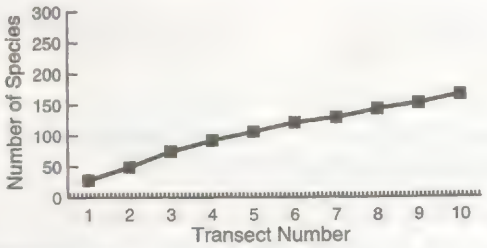
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	81	26	5	112
NUMBER OF INDIVIDUALS	285	52	8	345
NUMBER OF FAMILIES	36	13	4	42
BASAL AREA	3.50	0.16	0.12	3.77 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Moraceae 13	Arecaceae 61	*Phytelephas* sp.1 - 55
Fabaceae 12	Euphorbiaceae 52	*Acalypha diversifolia* - 27
Sapindaceae 7	Moraceae 41	*Drypetes* sp.1 - 23
Lauraceae 7	Fabaceae 34	*Prunus* sp.1 - 10
Bignoniaceae 6	Sapindaceae 11	*Clarisia racemosa* - 10
Euphorbiaceae 4	Bignoniaceae 11	*Garcinia* sp.1 - 9
Rubiaceae 4	Lauraceae 11	*Bauhinia* sp.1 - 8
Arecaceae 4	Clusiaceae 10	*Sorocea* sp.1 - 8
	Rosaceae 10	*Inga* sp.4 - 6
	Malpighiaceae 7	*Clavija* sp.1 - 6

SITE NO. 161: Mishana Tahuampa (tahuampa)
LOCALITY: Peru. Loreto: Maynas, Mishana, halfway between Iquitos and Santa María de Nanay, seasonally flooded by black water Río Nanay.
COORDINATES: 03°47' S, 73°30' W
COLLECTORS: A. Gentry, J. Aronson, N. Jaramillo
VOUCHERS: 24870 - 25365
DATES: 22 February - 3 March 1979

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 130 m
ANN. RAINFALL: ca. 3,100 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 88.50



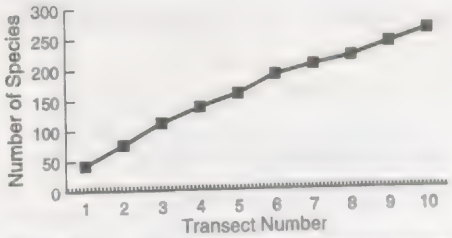
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	123	41	2	166
NUMBER OF INDIVIDUALS	393	94	2	489
NUMBER OF FAMILIES	35	15	1	44
BASAL AREA	3.57	0.25	0.21	4.03 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 23	Moraceae 105	*Sorocea steinbachii* - 87
Annonaceae 10	Fabaceae 44	*Pourouma cucura* - 14
Lauraceae 10	Sapotaceae 34	*Memora pseudopatula* - 11
Myrtaceae 9	Annonaceae 26	*Pouteria rostrata* - 9
Sapotaceae 8	Chrysobalanaceae 25	*Couepia williamsii* - 9
Celastraceae 7	Bignoniaceae 21	*Pseudoxandra polyphleba* - 8
Rubiaceae 7	Lauraceae 19	*Paragonia pyramidata* - 8
Sapindaceae 6	Myrtaceae 18	*Eschweilera gigantea* - 7
Chrysobalanaceae 6	Cecropiaceae 16	*Virola elongata* - 7
Euphorbiaceae 6	Rubiaceae 16	*Pouteria caimito* - 7

SITE NO. 162: Mishana Old Floodplain (mishnfl)
LOCALITY: Peru. Loreto: Maynas, Mishana, halfway between Iquitos and Santa Maria de Nanay, old floodplain of Río Nanay.
COORDINATES: 03°47' S, 73°30' W
COLLECTORS: A. Gentry, C. Díaz, C. Ruíz, J. Aronson
VOUCHERS: 21074 - 21137, 22371 - 22474, 24970 - 25299
DATES: 2 - 3 December 1977, 31 May 1978, 24 February 1979

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 130 m
ANN. RAINFALL: ca. 3,100 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 243.13



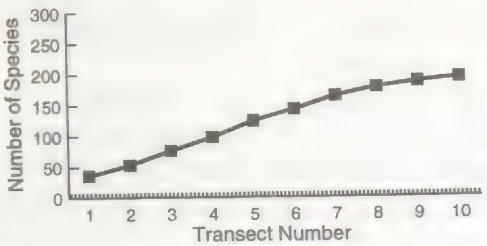
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	210	52	2	264
NUMBER OF INDIVIDUALS	398	75	4	477
NUMBER OF FAMILIES	48	21	2	61
BASAL AREA	3.21	0.098	0.0029	3.31 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 20	Arecaceae 34	*Rinorea racemosa* - 19
Annonaceae 19	Bignoniaceae 31	*Oenocarpus bataua* - 15
Lauraceae 14	Annonaceae 29	*Jacaranda macrocarpa* - 12
Euphorbiaceae 12	Myristicaceae 29	*Lepidocaryum gracile* - 10
Bignoniaceae 11	Fabaceae 26	*Guarea trunciflora* - 8
Meliaceae 10	Meliaceae 23	*Licania lata* - 7
Sapotaceae 10	Violaceae 21	*Mabea elata* - 7
Arecaceae 9	Sapotaceae 20	*Loreya umbellata* - 6
Myristicaceae 9	Euphorbiaceae 19	*Iryanthera macrophylla* - 6
3 families with 8	2 families with 18	3 species with 5

SITE NO. 163: Mishana White Sand (mishws)
LOCALITY: Peru. Loreto: Maynas, Mishana, Río Nanay halfway between Iquitos and Santa María de Nanay, white sand forest above Río Nanay.
COORDINATES: 03°47' S, 73°30' W
COLLECTORS: A. Gentry, C. Díaz, J. Aronson, N. Jaramillo
VOUCHERS: 25873 - 26186
DATES: 21 - 24 March 1979

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 140 m
ANN. RAINFALL: ca. 3,100 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 148.12



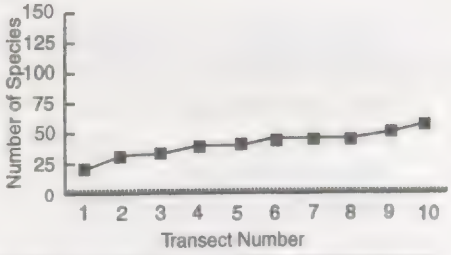
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	167	24	2	193
NUMBER OF INDIVIDUALS	343	52	2	397
NUMBER OF FAMILIES	45	10	1	51
BASAL AREA	2.59	0.062	0.0034	2.66 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 25	Fabaceae 52	*Neea divaricata* - 10
Sapotaceae 18	Euphorbiaceae 40	*Micrandra elata* - 9
Annonaceae 16	Sapotaceae 34	*Chrysophyllum bombycina* - 7
Lauraceae 14	Annonaceae 33	*Leptothyrsa sprucei* - 7
Euphorbiaceae 13	Lauraceae 19	*Rinorea racemosa* - 7
Myristicaceae 7	Myristicaceae 14	*Memora croatii* - 7
Malpighiaceae 6	Nyctaginaceae 13	6 species with 6
Apocynaceae 6	Bignoniaceae 13	
Sapindaceae 5	Rutaceae 12	
Clusiaceae 5	2 families with 11	

SITE NO. 164: Montaña de Cuyas (cuyas)
LOCALITY: Peru. Piura: Montaña de Cuyas, 8 km NE of Ayabaca.
COORDINATES: 04°32' S, 79°44' W
COLLECTORS: A. Gentry, C. Díaz, R. Ortiz
VOUCHERS: 75058 - 75126
DATES: 25 - 26 September 1991

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane dry forest
ELEVATION: 2,410 m
ANN. RAINFALL: 700 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 18.40



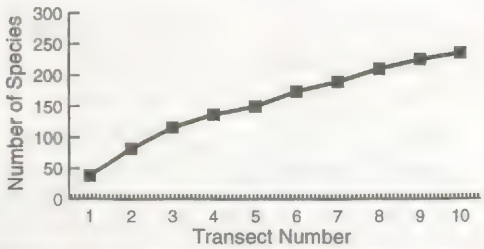
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	34	20	0	54
NUMBER OF INDIVIDUALS	239	89	0	328
NUMBER OF FAMILIES	19	17	0	33
BASAL AREA	6.87	0.11	0	6.98 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Solanaceae 8	Piperaceae 47	*Piper* sp.1 - 47
Asteraceae 5	Meliaceae 37	*Eugenia* sp.1 - 27
Lauraceae 5	Myrtaceae 30	*Guarea kunthiana* - 23
Melastomataceae 3	Solanaceae 30	*Anthurium coripatense* - 16
Urticaceae 3	Melastomataceae 17	*Colignonia parviflora* var. *biumbellata* - 15
Meliaceae 2	Araceae 16	*Geissanthus lepidotus* - 14
Myrtaceae 2	Nyctaginaceae 15	*Ruagea* sp.1 - 14
	Myrsinaceae 14	*Palicourea* sp.1 - 12
	Asteraceae 13	3 species with 10
	Lauraceae 13	

SITE NO. 165: Río Candamo (candamo)
LOCALITY: Peru. Puno: Ridge at mouth of Río Guacamayo.
COORDINATES: 13°30' S, 69°50' W
COLLECTORS: A. Gentry, C. Reynel, R. Ortiz, P. Núñez
VOUCHERS: 77049 - 77339
DATES: 24 - 29 May 1992

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical rain forest
ELEVATION: 790 m
ANN. RAINFALL: 6,760 mm (at Quince Mil)
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 203.80



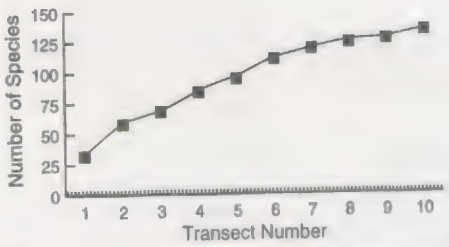
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	189	36	11	236
NUMBER OF INDIVIDUALS	358	50	37	445
NUMBER OF FAMILIES	54	22	7	69
BASAL AREA	4.95	0.11	0.031	5.09 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 19	Euphorbiaceae 37	*Iriartea deltoidea* - 28
Myrtaceae 13	Arecaceae 36	*Polybotrya osmundacea* - 20
Rubiaceae 13	Fabaceae 27	*Pausandra* sp.1 - 17
Clusiaceae 9	Aspleniaceae 23	*Cyathea tortuosa* - 11
Moraceae 9	Meliaceae 21	*Qualea* sp.1 - 7
Nyctaginaceae 8	Moraceae 18	*Euphorbia* sp.1 - 7
Euphorbiaceae 8	Violaceae 17	*Mabea* sp.1 - 7
Meliaceae 7	Clusiaceae 16	*Trichilia* sp.1 - 6
Sapotaceae 7	Rubiaceae 16	6 species with 5
Violaceae 6	2 families with 14	

SITE NO. 166: Pampas del Heath (rioheath)
LOCALITY: Peru. Madre de Dios: Tambopata, Pampas del Heath.
COORDINATES: 12°50' S, 68°50' W
COLLECTORS: A. Gentry, P. Núñez
VOUCHERS: 69617 - 69767
DATES: 26 - 28 February 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane wet forest
ELEVATION: 200 m
ANN. RAINFALL: 2,200 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 77.10



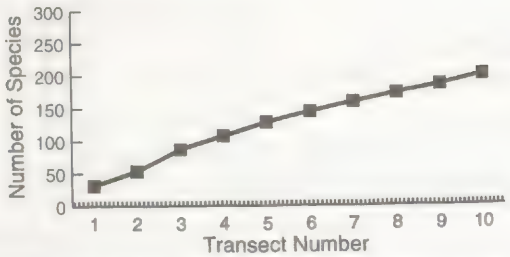
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	103	32	0	135
NUMBER OF INDIVIDUALS	302	65	0	367
NUMBER OF FAMILIES	34	12	0	40
BASAL AREA	3.37	0.17	0	3.54 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 18	Arecaceae 42	*Oenocarpus* sp. 1 - 20
Bignoniaceae 11	Fabaceae 37	*Hirtella* sp.1 - 19
Melastomataceae 10	Melastomataceae 30	*Tetragastris* sp.1 - 13
Moraceae 9	Moraceae 26	*Siparuna* cf. *guianensis* - 13
Myristicaceae 10	Myristicaceae 21	*Pseudolmedia laevigata* - 9
Arecaceae 5	Bignoniaceae 20	*Pourouma cecropiifolia* - 9
Apocynaceae 5	Chrysobalanaceae 20	*Amaioua* sp.1 - 8
Rubiaceae 5	Burseraceae 16	*Geonoma* sp.1 - 8
6 families with 4	Monimiaceae 15	*Leonia glycicarpa* - 8
	Rubiaceae 14	*Piper arboreum* - 8

SITE NO. 167: Río Távara (riotavar)
LOCALITY: Peru. Puno: Río Távara base camp.
COORDINATES: 13°21' S, 69°40' W
COLLECTORS: A. Gentry, C. Reynel, R. Ortiz, P. Núñez
VOUCHERS: 76610 - 76886
DATES: 16 - 20 May 1992

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical rain forest
ELEVATION: 400 m
ANN. RAINFALL: 6,760 mm (at Quince Mil)
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 170.18



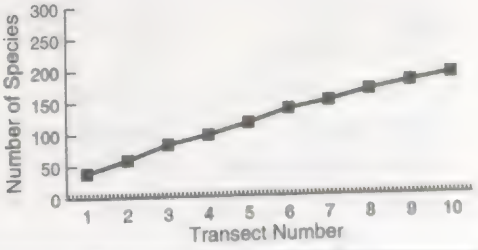
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	146	50	4	200
NUMBER OF INDIVIDUALS	279	82	20	381
NUMBER OF FAMILIES	37	18	4	53
BASAL AREA	4.58	0.14	0.011	4.73 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 32	Fabaceae 45	cf. *Bathysa* sp.1 - 24
Melastomataceae 14	Rubiaceae 38	*Asplundia ecuadoriensis* - 11
Bignoniaceae 11	Melastomataceae 27	*Ferdinandusa* cf. *loretensis* - 8
Lauraceae 10	Arecaceae 23	*Guarea macrophylla* - 7
Sapotaceae 8	Bignoniaceae 19	*Socratea* cf. *exorrhiza* - 7
Arecaceae 7	Sapindaceae 15	Connaraceae gen.1 sp.1 - 7
Annonaceae 7	Moraceae 14	*Matayba* sp.1 - 6
Moraceae 7	Lauraceae 13	*Piper* sp.1 - 6
Rubiaceae 7	Elaeocarpaceae 12	*Geonoma* sp.1 - 6
2 families with 6	Cyclanthaceae 11	2 species with 5

SITE NO. 168: Shiringamazú (shiringa)
LOCALITY: Peru. Pasco: Oxapampa, Shiringamazú, ca. 20 km S of Iscozacín, Río Palcazu Valley.
COORDINATES: 10°20' S, 75°10' W
COLLECTORS: A. Gentry, C. Díaz, O. Phillips, D. Gorchov, W. Pariona Arias
VOUCHERS: 63301 - 63534
DATES: 6 - 9 July 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane rain forest
ELEVATION: 300 m
ANN. RAINFALL: 5,000 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 161.17



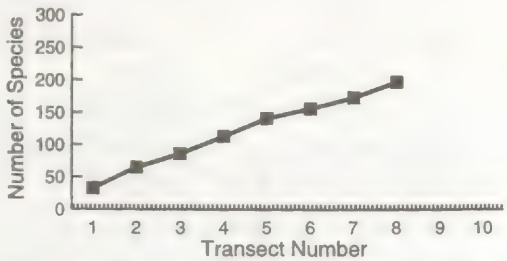
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	145	45	1	191
NUMBER OF INDIVIDUALS	288	77	1	366
NUMBER OF FAMILIES	40	22	1	52
BASAL AREA	2.82	0.19	0.0005	3.01 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 29	Fabaceae 61	*Virola sebifera* - 10
Sapotaceae 12	Myristicaceae 24	*Macrolobium* sp.1 - 9
Lauraceae 10	Sapotaceae 22	*Mabea* sp.1 - 8
Burseraceae 8	Clusiaceae 22	*Cyathea lasiosora* - 8
Clusiaceae 8	Burseraceae 21	*Caraipa jaramilloi* - 6
Rubiaceae 8	Chrysobalanaceae 19	*Chrysophyllum sanguinolentum* - 6
Chrysobalanaceae 7	Lauraceae 13	13 species with 5
Myristicaceae 7	Meliaceae 11	
Meliaceae 6	Euphorbiaceae 11	
Celastraceae 6	Rubiaceae 11	

SITE NO. 169: Quebrada Sucusari (sucusari)
LOCALITY: Peru. Loreto: Near Quebrada Sucusari, N side tributary of Río Napo, between Explornapo Camp and ACEER Camp.
COORDINATES: 03°15' S, 72°55' W
COLLECTORS: A. Gentry, R. Vásquez, N. Jaramillo
VOUCHERS: 54315 - 54530
DATES: 14 - 15 June 1986

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 140 m
ANN. RAINFALL: 3,100 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 800 m^2
FISHER'S ALPHA: 234.08



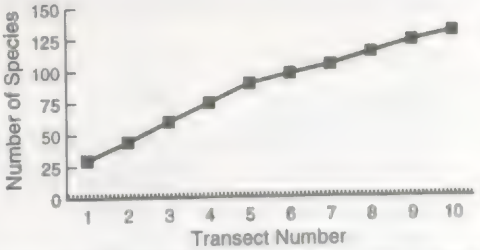
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	156	39	2	197
NUMBER OF INDIVIDUALS	253	54	2	309
NUMBER OF FAMILIES	39	17	2	49
BASAL AREA	3.06	0.14	0.0033	3.20 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 22	Fabaceae 38	*Rinorea lindeniana* - 16
Annonaceae 14	Myristicaceae 21	*Virola calophylla* - 6
Arecaceae 11	Violaceae 21	*Aptandra caudata* - 6
Myristicaceae 11	Annonaceae 20	*Machaerium* sp.1 - 5
Lauraceae 9	Arecaceae 18	*Ocotea javanensis* - 5
Burseraceae 7	Lauraceae 16	7 species with 4
Chrysobalanaceae 7	Bombacaceae 11	
Rubiaceae 7	Burseraceae 10	
3 families with 6	Lecythidaceae 10	
	3 families with 9	

SITE NO. 170: Tambopata Upland Sandy (tambupl)
LOCALITY: Peru. Madre de Dios: Explorer's Inn Tourist Camp, at junction of Ríos La Torre and Tambopata, upland sandy-clay forest.
COORDINATES: 12°49' S, 69°43' W
COLLECTORS: A. Gentry, C. Díaz, N. Jaramillo
VOUCHERS: 51398 - 51465
DATES: 27 July 1985

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane wet forest
ELEVATION: 260 m
ANN. RAINFALL: 2,200 mm
SOIL DATA: Clinebell et al. 1995, Phillips 1993
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 78.94



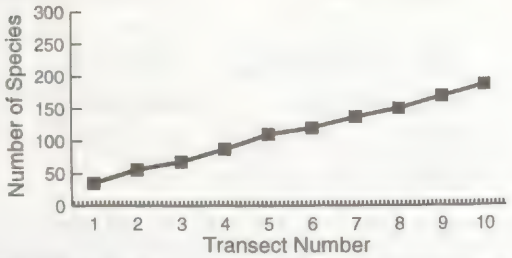
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	99	31	1	131
NUMBER OF INDIVIDUALS	256	79	1	336
NUMBER OF FAMILIES	38	13	1	46
BASAL AREA	4.55	0.15	0.0005	4.70 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 11	Myristicaceae 39	*Iryanthera juruensis* - 19
Fabaceae 10	Combretaceae 29	*Thiloa paraguariensis* - 18
Lauraceae 8	Cecropiaceae 26	*Pourouma minor* - 17
Melastomataceae 7	Monimiaceae 24	*Virola sebifera* - 11
Arecaceae 6	Bignoniaceae 24	*Combretum* sp.1 - 11
Monimiaceae 5	Arecaceae 17	*Hirtella racemosa* - 9
Annonaceae 5	Fabaceae 17	*Mollinedia killippii* - 9
Myristicaceae 5	Melastomataceae 16	*Roucheria punctata* - 8
Piperaceae 5	Lauraceae 14	*Geonoma interrupta* - 8
Rubiaceae 5	Chrysobalanaceae 12	*Siparuna decipiens* - 8

SITE NO. 171: Tambopata Alluvial (tamboall)
LOCALITY: Peru. Madre de Dios: Tambopata Tourist Camp, at junction of Ríos La Torre and Tambopata, mature floodplain forest.
COORDINATES: 12°50' S, 69°17' W
COLLECTORS: A. Gentry, R. Ortiz, & students of the San Marcos University master's course.
VOUCHERS: 78074 - 78408
DATES: 15 - 20 December 1992

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane wet forest
ELEVATION: 260 m
ANN. RAINFALL: 2,200 mm
SOIL DATA: Clinebell et al. 1995, Phillips 1993
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 162.01



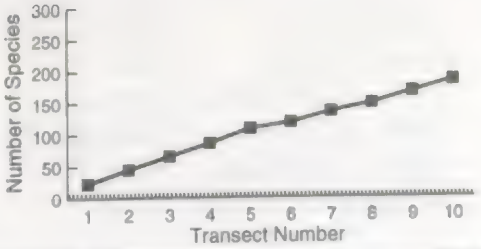
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	131	52	5	188
NUMBER OF INDIVIDUALS	267	83	5	355
NUMBER OF FAMILIES	40	26	4	58
BASAL AREA	6.35	0.18	0.0029	6.53 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 22	Violaceae 49	*Rinorea viridifolia* - 43
Lauraceae 14	Arecaceae 34	*Iriartea deltoidea* - 18
Moraceae 11	Fabaceae 25	*Socratea exorrhiza* - 11
Annonaceae 10	Moraceae 20	*Trigynaea* sp.1 - 8
Meliaceae 9	Annonaceae 18	*Pseudolmedia laevis* - 7
Bignoniaceae 9	Lauraceae 17	*Urera eggersii* - 6
Sapindaceae 7	Bignoniaceae 15	*Ischnosiphon killippii* - 5
Sapotaceae 7	Meliaceae 12	*Turpinia occidentalis* - 5
3 families with 5	Myrtaceae 11	Myrtaceae gen.3 sp.1 - 5
	Piperaceae 9	*Siparuna* sp.1 - 5

SITE NO. 172: Tambopata Swamp Trail (tamblat2)
LOCALITY: Peru. Madre de Dios: Tambopata Nature Reserve, at junction of Rios La Torre and Tambopata, previous floodplain forest.
COORDINATES: 12°47' S, 69°17' W
COLLECTORS: A. Gentry, N. Jaramillo
VOUCHERS: 57824 - 57911
DATES: 29 - 30 May 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane wet forest
ELEVATION: 260 m
ANN. RAINFALL: 2,200 mm
SOIL DATA: Clinebell et al. 1995, Phillips 1993
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 109.16



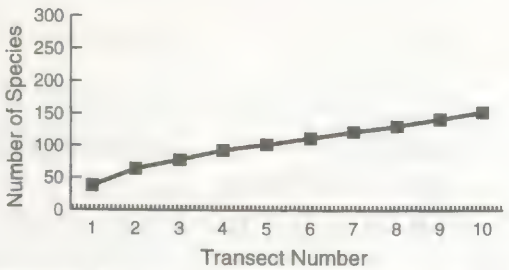
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	116	40	2	158
NUMBER OF INDIVIDUALS	273	80	2	355
NUMBER OF FAMILIES	40	21	2	55
BASAL AREA	4.69	0.14	0.0027	4.83 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 16	Violaceae 57	*Rinorea viridifolia* - 45
Moraceae 11	Fabaceae 31	*Iriartea deltoidea* - 21
Bignoniaceae 10	Arecaceae 30	Myrtaceae gen.1 sp.1 - 13
Arecaceae 7	Bignoniaceae 29	*Roentgenia bracteomana* - 10
Annonaceae 6	Myrtaceae 18	*Leonia glycicarpa* - 8
Lauraceae 6	Moraceae 15	*Hirtella* sp.1 - 7
Nyctaginaceae 5	Piperaceae 15	6 species with 6
Apocynaceae 5	Annonaceae 9	
Myrtaceae 5	Lauraceae 9	
Piperaceae 5	4 families with 8	

SITE NO. 173: Tambopata Lateritic (tambo)
LOCALITY: Perú. Madre de Dios: Explorer's Inn Tourist Camp, at junction of Ríos La Torre and Tambopata, clay upland forest.
COORDINATES: 12°47' S, 69°17' W
COLLECTORS: A. Gentry, K. Young
VOUCHERS: 31808 - 31996
DATES: 1 - 4 March 1981

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane wet forest
ELEVATION: 260 m
ANN. RAINFALL: 2,200 mm
SOIL DATA: Clinebell et al. 1995, Phillips 1993
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 102.35



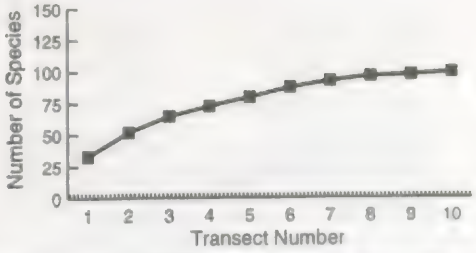
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	109	44	0	153
NUMBER OF INDIVIDUALS	273	81	0	354
NUMBER OF FAMILIES	38	20	0	50
BASAL AREA	4.22	0.088	0	4.31 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 15	Violaceae 40	*Rinorea pubiflora* - 31
Fabaceae 13	Bignoniaceae 32	*Iriartea deltoidea* - 20
Annonaceae 8	Arecaceae 29	*Calyptranthes* sp.1 - 16
Lauraceae 8	Myrtaceae 23	*Neea macrophylla* - 9
Arecaceae 7	Fabaceae 15	*Hirtella racemosa* - 9
Myristicaceae 6	Monimiaceae 15	*Siparuna decipiens* - 7
Cecropiaceae 5	Annonaceae 15	*Petrea* cf. *maynensis* - 7
Celastraceae 5	Lauraceae 13	4 species with 6
Rubiaceae 5	Celastraceae 12	
6 families with 4	2 families with 11	

SITE NO. 174: Tarapoto (tarapoto)
LOCALITY: Perú. San Martín: 31 km S of Tarapoto, slopes overlooking Río Huallaga.
COORDINATES: 06°35' S, 76°25' W
COLLECTORS: A. Gentry, D. Smith, R. Tredwell
VOUCHERS: 37698 - 37832, 44989 - 45089
DATES: 18 - 20 July 1982, 5 - 6 February 1984

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 350 - 540 m
ANN. RAINFALL: 1,400 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 38.84



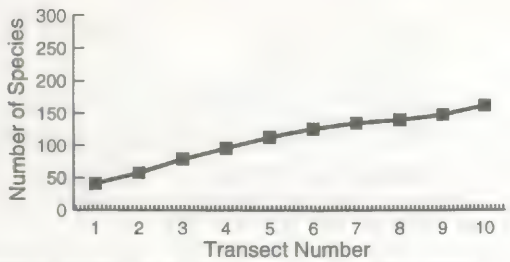
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	73	26	1	100
NUMBER OF INDIVIDUALS	382	88	1	471
NUMBER OF FAMILIES	31	17	1	37
BASAL AREA	2.45	0.11	0.002	2.57 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 10	Polygonaceae 50	*Coccoloba padiformis* - 19
Bignoniaceae 9	Myrtaceae 39	*Triplaris setosa* - 19
Myrtaceae 7	Rubiaceae 34	*Maytenus retusa* - 18
Rubiaceae 7	Celastraceae 32	*Alseis peruviana* - 16
Capparidaceae 5	Capparidaceae 29	*Cordia iguaguana* - 15
Nyctaginaceae 4	Fabaceae 28	*Hippocratea volubilis* - 13
Sapindaceae 4	Bignoniaceae 25	*Myrcia* sp.1 - 13
Solanaceae 4	Boraginaceae 22	*Allophylus loretensis* - 13
8 families with 3	Sapindaceae 21	4 species with 12
	Euphorbiaceae 18	

SITE NO. 175: Venceremos (vencer)
LOCALITY: Perú. San Martín: Venceremos, near Amazonas border, Km 291 on Rioja-Pomacocha road.
COORDINATES: 05°45' S, 77°40' W
COLLECTORS: A. Gentry, D.N. Smith
VOUCHERS: 45227 - 45537
DATES: 9 - 13 February 1984

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane moist forest
ELEVATION: 1,850 m
ANN. RAINFALL: 1,300 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 87.31



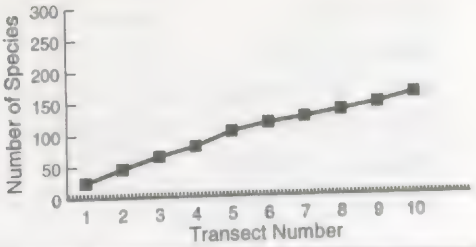
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	132	18	12	162
NUMBER OF INDIVIDUALS	412	33	26	471
NUMBER OF FAMILIES	40	11	6	48
BASAL AREA	5.63	0.079	0.024	5.73 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 30	Rubiaceae 86	*Coussarea* sp.2 - 20
Rubiaceae 21	Lauraceae 66	*Chrysochlamys* sp.1 - 19
Clusiaceae 10	Clusiaceae 37	*Otoba parvifolia* - 19
Moraceae 8	Moraceae 25	*Faramea* sp.2 - 17
Melastomataceae 7	Melastomataceae 21	*Huertea glandulosa* - 15
Annonaceae 6	Meliaceae 20	*Psychotria* sp.3 - 11
Fabaceae 5	Myristicaceae 19	*Aniba muca* - 11
5 families with 4	Staphyleaceae 15	*Guarea kunthiana* - 9
	Euphorbiaceae 14	*Clarisia biflora* - 9
	2 families with 13	2 species with 8

SITE NO. 176: Yanamono Tahuampa (yanamtah)
LOCALITY: Perú. Loreto: Maynas, Yanamono, Explorama Lodge tourist camp, N bank of Río Amazonas, halfway between Indiana and Río Napo, seasonally-inundated floodplain forest.
COORDINATES: 03°28' S, 72°50' W
COLLECTORS: A. Gentry, R. Vásquez, N. Jaramillo
VOUCHERS: 43130 - 43202, 43738 - 43823
DATES: 15 - 16 July 1983, 28 - 29 August 1983

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 120 - 130 m
ANN. RAINFALL: ca. 3,100 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 114.78



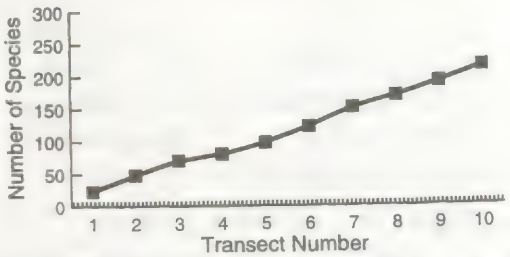
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	114	40	8	162
NUMBER OF INDIVIDUALS	283	64	9	356
NUMBER OF FAMILIES	39	19	4	52
BASAL AREA	9.83	0.11	0.042	9.98 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 15	Rubiaceae 38	*Gustavia augusta* - 19
Annonaceae 10	Lecythidaceae 25	*Quararibea amazonica* - 19
Moraceae 9	Fabaceae 23	*Heliconia juruana* - 14
Rubiaceae 9	Arecaceae 21	*Rudgea loretensis* - 12
Melastomataceae 8	Euphorbiaceae 21	*Drypetes amazonica* - 12
Bignoniaceae 7	Bombacaceae 20	*Coussarea brevicaulis* - 9
Sapotaceae 6	Annonaceae 16	*Capparis macrophylla* - 8
Euphorbiaceae 6	Musaceae 14	*Leonia glycicarpa* - 8
Myrtaceae 6	Melastomataceae 12	3 species with 7
5 families with 5	Bignoniaceae 12	

SITE NO. 177: Yanamono 1 (yanam1)
LOCALITY: Peru. Loreto: Maynas, Yanamono, Explorama Lodge tourist lodge. N bank of Río Amazonas, halfway between Indiana and Río Napo, mature non-inundated forest on laterite.
COORDINATES: 03°26' S, 72°51' W
COLLECTORS: A. Gentry, J. Aronson, N. Jaramillo
VOUCHERS: 27744 - 28058
DATES: 9 - 13 November 1979

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 140 m
ANN. RAINFALL: ca. 3,100 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 324.53



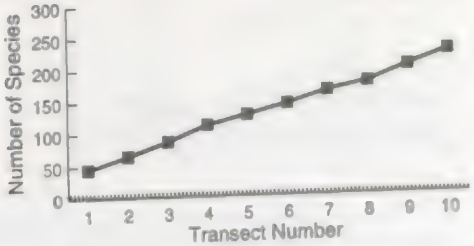
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	170	42	2	214
NUMBER OF INDIVIDUALS	243	58	2	303
NUMBER OF FAMILIES	40	19	2	53
BASAL AREA	4.20	0.079	0.001	4.28 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 27	Fabaceae 43	*Otoba parvifolia* - 7
Annonaceae 13	Myristicaceae 27	*Otoba glycicarpa* - 7
Moraceae 12	Meliaceae 21	*Bathysa* sp.1 - 5
Rubiaceae 12	Rubiaceae 21	*Guarea kunthiana* - 5
Meliaceae 11	Moraceae 17	*Rinorea lindeniana* - 5
Myristicaceae 10	Annonaceae 14	6 species with 4
Arecaceae 9	Flacourtiaceae 13	
Bignoniaceae 9	Bignoniaceae 10	
Flacourtiaceae 8	Arecaceae 9	
Myrtaceae 7	Piperaceae 8	

SITE NO. 178: Yanamono 2 (yanam2)
LOCALITY: Peru. Loreto: Maynas, Yanamono, Explorama Lodge tourist lodge, N bank of Río Amazonas, halfway between Indiana and Río Napo, mature forest on yellowish lateritic soil.
COORDINATES: 03°26' S, 72°51' W
COLLECTORS: A. Gentry, R. Vásquez, N. Jaramillo
VOUCHERS: 42465 - 43096 (Not all numbers are in these transects)
DATES: 1 - 15 July 1983

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 140 m
ANN. RAINFALL: ca. 3,100 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 316.20



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	185	39	2	226
NUMBER OF INDIVIDUALS	271	56	3	330
NUMBER OF FAMILIES	43	20	2	54
BASAL AREA	4.25	0.13	0.0029	4.39 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 27	Fabaceae 37	*Otoba glycicarpa* - 9
Rubiaceae 16	Myristicaceae 29	*Otoba parvifolia* - 7
Annonaceae 12	Rubiaceae 23	*Astrocaryum murumuru* - 6
Meliaceae 11	Meliaceae 19	*Gustavia longifolia* - 5
Myristicaceae 11	Flacourtiaceae 16	*Pentagonia subauriculata* - 4
Moraceae 10	Annonaceae 14	*Mikania* sp.1 - 4
Bignoniaceae 8	Lecythidaceae 14	*Combretum laxum* - 4
Lecythidaceae 8	Clusiaceae 11	*Carpotroche longifolia* - 4
Euphorbiaceae 7	Arecaceae 10	*Caraipa guianensis* - 4
4 families with 6	Moraceae 10	*Dalbergia monetaria* - 4

SITE NO. 179: Blohm Ranch (blohmr)
LOCALITY: Venezuela. Guárico: Blohm Ranch, 39 km S of Calabozo.
COORDINATES: 08°34' N, 67°35' W
COLLECTORS: A. Gentry, G. Troth
VOUCHERS: 24731 - 24801
DATES: 14 - 15 February 1979

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 100 m
ANN. RAINFALL: 1,400 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 25.16

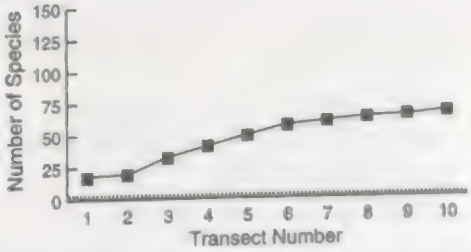
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	46	17	2	65
NUMBER OF INDIVIDUALS	227	78	3	308
NUMBER OF FAMILIES	26	10	1	32
BASAL AREA	2.58	0.10	0.44	3.13 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 14	Fabaceae 42	*Arrabidaea oxycarpa* - 23
Bignoniaceae 6	Bignoniaceae 37	*Guazuma ulmifolia* - 22
Rubiaceae 5	Sterculiaceae 22	*Copernicia tectorum* - 18
Sapindaceae 4	Rubiaceae 19	*Myrcia umbellifera* - 17
Capparaceae 3	Arecaceae 18	*Pterocarpus rohrii* - 11
Moraceae 3	Myrtaceae 17	*Diospyros jerensis* - 11
Verbenaceae 3	Polygonaceae 15	*Guettarda divaricata* - 11
Polygonaceae 2	Capparaceae 13	*Hecatostemon completus* - 11
Rhamnaceae 2	Verbenaceae 13	*Zanthoxylum culantrillo* - 10
	3 families with 11	*Machaerium moritizianum* - 10

SITE NO. 180: Boca de Uchire (uchire)
LOCALITY: Venezuela. Anzoátegui: Km 227 on Caracas-Barcelona Highway, 16 km E of Boca de Uchire.
COORDINATES: 10°8'48" N, 65°25'40" W
COLLECTORS: A. Gentry, P. Berry
VOUCHERS: 14797 - 14874
DATES: 4 July 1975

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 150 m
ANN. RAINFALL: 1,200 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 29.16



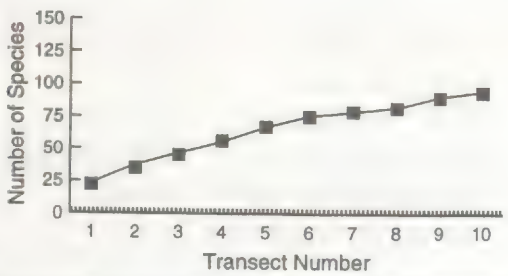
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	51	16	0	67
NUMBER OF INDIVIDUALS	186	75	0	261
NUMBER OF FAMILIES	18	6	0	20
BASAL AREA	1.26	0.083	0	1.34 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 15	Fabaceae 112	*Acacia glomerosa* - 26
Bignoniaceae 12	Bignoniaceae 72	*Machaerium latialatum* - 18
Capparaceae 5	Capparaceae 11	*Arrabidaea pubescens* - 18
Euphorbiaceae 4	Loganiaceae 9	*Acacia tamarindifolia* - 15
Nyctaginaceae 4	Malpighiaceae 9	*Mansoa verrucifera* - 14
Rubiaceae 4	Nyctaginaceae 7	*Coursetia arborea* - 14
Sapindaceae 3	Euphorbiaceae 6	*Machaerium moritizianum* - 14
7 families with 2	Rubiaceae 6	*Cassia emarginata* - 13
	Sapindaceae 6	*Tabebuia ochracea* - 12
	Apocynaceae 4	*Strychnos fendleri* - 9

SITE NO. 181: Cerro de la Neblina1 (ceroneb1)
LOCALITY: Venezuela. Amazonas: Cerro Neblina, base camp on Río Mawarinuma.
COORDINATES: 00°50' N, 66°11' W
COLLECTORS: A. Gentry, B. Stein
VOUCHERS: 46790 - 47053
DATES: 20 - 29 April 1984

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 140 m
ANN. RAINFALL: 3,000 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 39.51



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	74	20	0	94
NUMBER OF INDIVIDUALS	356	30	0	386
NUMBER OF FAMILIES	28	9	0	34
BASAL AREA	2.64	0.085	0	2.73 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 23	Fabaceae 144	*Sandwithia guianensis* - 49
Annonaceae 6	Euphorbiaceae 52	*Matayba inelegans* - 36
Lauraceae 6	Annonaceae 41	*Eperua leucantha* - 36
Burseraceae 5	Sapindaceae 41	*Duguetia* sp.1 - 26
Sapindaceae 5	Burseraceae 19	*Swartzia* sp.1 - 22
Sapotaceae 4	Lauraceae 12	*Clathrotropis* sp.1 - 15
5 families with 3	Rubiaceae 7	*Swartzia benthamiana* - 14
	4 families with 6	*Heterostemon* sp.1 - 13
		Protium fimbriatum - 11
		2 species with 8

SITE NO. 182: Cerro de la Neblina 2 (ceroneb2)
LOCALITY: Venezuela. Amazonas: Cerro Neblina, between base camp and "Puerto Chimo" along Río Mawarinuma.
COORDINATES: 00°50' N, 66°11' W
COLLECTORS: A. Gentry, B. Stein
VOUCHERS: 47054 - 47216
DATES: 29 April - 6 May 1984

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 140 m
ANN. RAINFALL: 3,000 mm
SOIL DATA: Clinebell et al. 1995
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 30.32

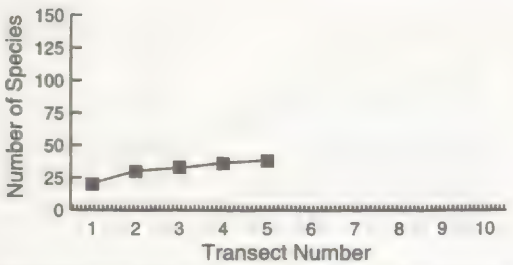
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	65	15	0	80
NUMBER OF INDIVIDUALS	368	26	0	394
NUMBER OF FAMILIES	25	9	0	30
BASAL AREA	3.94	0.11	0	4.05 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 17	Fabaceae 206	*Clathrotropis* sp.1 - 74
Annonaceae 6	Euphorbiaceae 51	*Sandwithia guianensis* - 44
Moraceae 5	Annonaceae 36	*Swartzia* sp.1 - 39
Apocynaceae 4	Chrysobalanaceae 11	*Eperua leucantha* - 23
Burseraceae 4	Sapindaceae 11	*Duguetia* sp.1 - 18
Euphorbiaceae 4	Burseraceae 9	*Swartzia benthamiana* - 15
Sapindaceae 4	Moraceae 8	*Inga neblinensis* - 13
Sapotaceae 4	Malpighiaceae 7	*Licania* sp.1 - 10
Bignoniaceae 3	Rubiaceae 7	*Heterostemon* sp.1 - 10
Malpighiaceae 3	Sapotaceae 6	*Anaxagorea* sp.1 - 8

SITE NO. 183: Estación Biológica de los Llanos (llano)
LOCALITY: Venezuela. Guárico: Estacion Biológica de los Llanos, 12 km S of Calabozo.
COORDINATES: 08°56' N, 67°25' W
COLLECTORS: A. Gentry
VOUCHERS: 10247 - 10302
DATES: 7 - 8 March 1974

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 100 m
ANN. RAINFALL: 1,312 mm
SOIL DATA: Not available
AREA SAMPLED: 500 m^2
FISHER'S ALPHA: 15.75



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	32	6	0	38
NUMBER OF INDIVIDUALS	134	26	0	160
NUMBER OF FAMILIES	19	3	0	21
BASAL AREA	1.16	0.028	0	1.19 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 7	Fabaceae 32	*Copaifera officinalis* - 12
Fabaceae 6	Bignoniaceae 28	*Lonchocarpus ernestii* - 11
Rubiaceae 4	Rubiaceae 28	*Cochlospermum vitifolium* - 11
Flacourtiaceae 3	Cochlospermaceae 11	*Guettarda divaricata* - 11
Annonaceae 2	Annonaceae 10	*Chomelia spinosa* - 10
	Tiliaceae 8	*Annona jahnii* - 9
	Erythroxylaceae 7	*Arrabidaea oxycarpa* - 9
	Sapindaceae 7	*Luehea candida* - 8
	Flacourtiaceae 5	*Erythroxylum orinocensis* - 7
	Nyctaginaceae 5	*Allophylus occidentalis* - 7

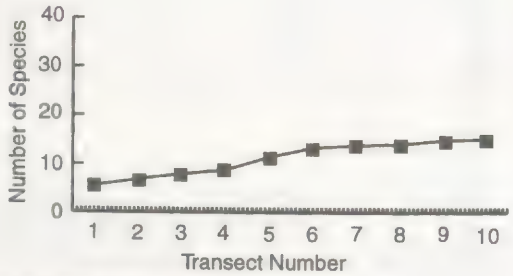
Section 4. Location of transects from Europe, sites 184–188.

184 – Suderhackstedt, Germany
185 – Allacher Lohe, Germany
186 – Ruissalo, Finland
187 – Liesjarvi National Park, Finland
188 – Uppsala, Sweden

SITE NO. 184: Süderhackstedt (suderhac)
LOCALITY: Germany.
COORDINATES: 54°36' N, 09°17' E
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Cool temperate moist forest
ELEVATION: 20 m
ANN. RAINFALL: 695 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 3.83



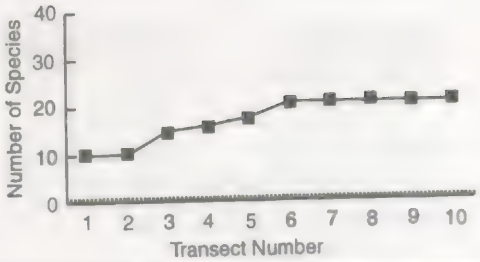
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	14	1	0	15
NUMBER OF INDIVIDUALS	185	3	0	188
NUMBER OF FAMILIES	9	1	0	10
BASAL AREA	4.25	0.0015	0	4.25 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Betulaceae 3	Fagaceae 98	*Fagus sylvatica* - 96
Fagaceae 2	Oleaceae 45	*Fraxinus excelsior* - 45
Rosaceae 2	Betulaceae 33	*Carpinus betulus* - 21
Salicaceae 2	Araliaceae 3	*Alnus glutinosa* - 8
	Salicaceae 3	*Corylus avellana* - 4
	Rosaceae 2	*Hedera helix* - 3
		Salix caprea - 2
		Quercus robur - 2

SITE NO. 185: Allacher Löhe (allacher)
LOCALITY: Germany.
COORDINATES: 48°04' N, 11°30' E
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Cool temperate moist forest
ELEVATION: 530 m
ANN. RAINFALL: 866 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 5.48



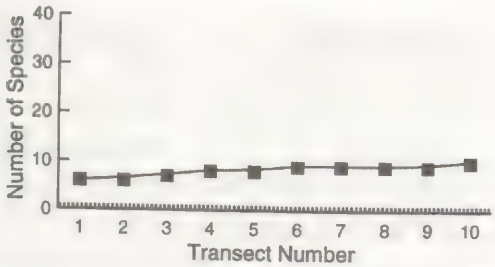
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	21	0	0	21
NUMBER OF INDIVIDUALS	248	0	0	248
NUMBER OF FAMILIES	11	0	0	11
BASAL AREA	3.35	0	0	3.35 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rosaceae 6	Tiliaceae 64	*Tilia platyphylla* - 64
Betulaceae 3	Rosaceae 38	*Fraxinus excelsior* - 34
Aceraceae 2	Fagaceae 35	*Quercus robur* - 33
Fagaceae 2	Oleaceae 34	*Acer pseudoplatanus* - 31
Pinaceae 2	Aceraceae 32	*Carpinus betulus* - 22
	Betulaceae 25	*Crataegus monogyna* - 13
	Pinaceae 10	*Prunus mahaleb* - 10
	Ulmaceae 5	*Picea abies* - 9
	Berberidaceae 2	*Crataegus macrocarpa* - 8
	Cornaceae 2	*Ulmus glabra* - 5

SITE NO. 186: Ruissalo (ruissalo)
LOCALITY: Finland.
COORDINATES: 60°32' N, 22°28' E
COLLECTORS: A. Gentry and graduate students of University of Turku.
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Boreal wet forest
ELEVATION: 20 m
ANN. RAINFALL: 500 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 2.13



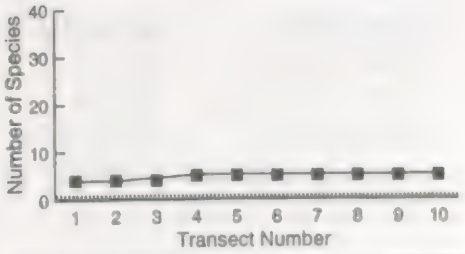
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	10	0	0	10
NUMBER OF INDIVIDUALS	232	0	0	232
NUMBER OF FAMILIES	8	0	0	8
BASAL AREA	4.17	0	0	4.17 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rosaceae 3	Rosaceae 103	*Sorbus aucuparia* - 66
	Aceraceae 65	*Acer platanoides* - 65
	Fagaceae 37	*Quercus robur* - 37
	Betulaceae 21	*Prunus padus* - 36
	Pinaceae 2	*Betula pendula* - 21
	Salicaceae 2	*Salix caprea* - 2
		Picea abies - 2

SITE NO. 187: Liesjarvi National Park (liesjvar)
LOCALITY: Finland.
COORDINATES: 60°40' N, 23°55' E
COLLECTORS: A. Gentry and graduate students of University of Turku.
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Boreal wet forest
ELEVATION: 50 m
ANN. RAINFALL: 600 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 0.99



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	5	0	0	5
NUMBER OF INDIVIDUALS	152	0	0	152
NUMBER OF FAMILIES	4	0	0	4
BASAL AREA	5.67	0	0	5.67 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Pinaceae 2	Pinaceae 142	*Picea abies* - 113
	Betulaceae 6	*Pinus sylvestris* - 29
	Cupressaceae 3	*Betula pendula* - 6
		Juniperus communis - 3

SITE NO. 188: Uppsala (uppsala)
LOCALITY: Sweden.
COORDINATES: 59°51' N, 17°38' E
COLLECTORS: A. Gentry
VOUCHERS: None
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Boreal wet forest
ELEVATION: 20 m
ANN. RAINFALL: 500 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 3.82

	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	13	0	0	13
NUMBER OF INDIVIDUALS	111	0	0	111
NUMBER OF FAMILIES	8	0	0	8
BASAL AREA	5.37	0	0	5.37 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Pinaceae 3	Pinaceae 41	*Betula pendula* - 23
Salicaceae 3	Betulaceae 24	*Picea abies* - 21
Betulaceae 2	Salicaceae 21	*Sorbus aucuparia* - 20
	Rosaceae 20	*Pinus sylvestris* - 11
	Rhamnaceae 2	*Salix caprea* - 9
		Pinus silvestris - 9
		Populus tremula - 6
		Populus cf. *nigra* - 6
		cf. *Rhamnus* sp.1 - 2

Section 5. Location of transects from Africa, sites 189–206.

189 – Banyong, Cameroon
190 – Korup National Park, Cameroon
191 – Mount Cameroun, Cameroon
192 – Ndakan, Central African Republic
193 – Ndakan Upland, Central African Republic
194 – Belinga, Gabon
195 – Makokou 1, Gabon
196 – Makokou 2, Gabon
197 – Beza 1, Madagascar
198 – Beza 2, Madagascar
199 – Beza 3, Madagascar
200 – Ankarafantsika, Madagascar
201 – Nosy Mangabe, Madagascar
202 – Perinet, Madagascar
203 – Brise Fer, Mauritius
204 – Omo Forest Reserve, Nigeria
205 – Pande Forest Reserve, Tanzania
206 – Pugu Forest Reserve, Tanzania

SITE NO. 189: Banyong (banyong)
LOCALITY: Cameroon. Southwest Province: Banyong, Batanga area, between Awong and Banyu, ca. 15 km W of Manyemen.
COORDINATES: 05°00' N, 09°10' E
COLLECTORS: A. Gentry, D. Thomas
VOUCHERS: 62378 - 62559U
DATES: 2 - 3 May 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 420 m
ANN. RAINFALL: 2,600 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 133.1

	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	151	47	0	198
NUMBER OF INDIVIDUALS	375	81	0	456
NUMBER OF FAMILIES	38	14	0	44
BASAL AREA	6.28	0.18	0	6.46 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Sterculiaceae 18	Sterculiaceae 51	*Angylocalyx talbotii* - 17
Fabaceae 17	Fabaceae 50	*Rinorea* sp.1 - 15
Apocynaceae 17	Euphorbiaceae 36	*Adenopodia scelerata* - 9
Euphorbiaceae 16	Apocynaceae 33	*Cola cauliflora* - 9
Icacinaceae 8	Violaceae 29	*Polyalthia* sp.1 - 7
Sapindaceae 8	Annonaceae 24	*Rinorea* sp.4 - 7
Annonaceae 8	Olacaceae 19	*Cola pachycarpa* - 7
Celastraceae 8	Sapindaceae 19	8 species with 6
Dichapetalaceae 7	Dichapetalaceae 15	
3 families with 6	Sapotaceae 15	

SITE NO. 190: Korup National Park (korup)
LOCALITY: Cameroon. Southwest Province: Kondotiti-Mundemba Rd., 4 km N of River Ilor bridge, 10 km SE of Korup National Park.
COORDINATES: 05°54' N, 08°42' E
COLLECTORS: A. Gentry, D. Thomas
VOUCHERS: 52659 - 52800
DATES: 11 - 13 November 1985

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical wet forest
ELEVATION: 100 m
ANN. RAINFALL: 5,460 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 69.39

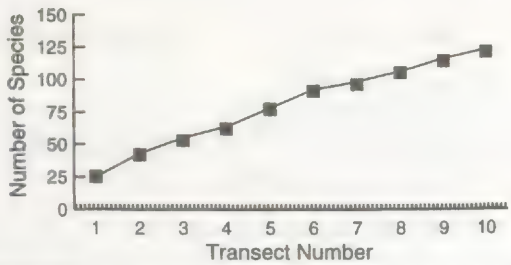
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	93	36	2	131
NUMBER OF INDIVIDUALS	315	64	10	389
NUMBER OF FAMILIES	32	14	2	44
BASAL AREA	12.71	0.12	0.022	12.85 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 24	Sterculiaceae 71	*Glossocalyx brevipes* - 42
Euphorbiaceae 12	Fabaceae 50	*Cola semicarpophylla* - 29
Rubiaceae 11	Monimiaceae 42	*Cola* sp. nov. - 16
Sterculiaceae 8	Euphorbiaceae 31	*Pancovia pedicillaris* - 13
Apocynaceae 7	Apocynaceae 18	*Ouabangia alata* - 13
Annonaceae 5	Rubiaceae 15	*Rinorea kamerunensis* - 10
Ebenaceae 4	Sapindaceae 14	*Angylocalyx oligophyllus* - 10
7 families with 3	Scytopetalaceae 13	*Englerophyton kennedyi* - 9
	Violaceae 12	*Rhektophyllum mirabile* - 8
	Sapotaceae 9	4 species with 7

SITE NO. 191: Mount Cameroun (mtcam)
LOCALITY: Cameroon. Southwest Province: S slope of Mt. Cameroun, W of Victoria.
COORDINATES: 04°05' N, 09°00' E
COLLECTORS: A. Gentry, D. Thomas
VOUCHERS: 52835 - 52969
DATES: 15 - 16 Nov. 1985

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical rain forest
ELEVATION: 200 - 250 m
ANN. RAINFALL: 8,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 68.53



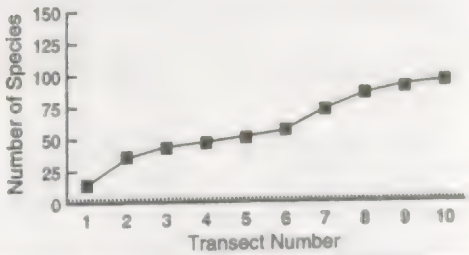
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	75	44	2	121
NUMBER OF INDIVIDUALS	243	87	2	332
NUMBER OF FAMILIES	27	17	2	41
BASAL AREA	11.28	0.12	0.0015	11.40 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 15	Sterculiaceae 49	*Octolobus heteromeris* - 29
Apocynaceae 9	Euphorbiaceae 47	*Crotonogyne preussii* - 19
Euphorbiaceae 8	Olacaceae 36	*Diogoa zenkeri* - 18
Olacaceae 7	Rubiaceae 28	*Drypetes ivorensis* - 18
Sterculiaceae 7	Apocynaceae 26	*Octolobus* sp.1 - 12
Icacinaceae 6	Dichapetalaceae 17	*Rinorea bipindensis* - 8
Annonaceae 6	Icacinaceae 17	*Alafia barteri* - 7
Dichapetalaceae 5	Violaceae 15	*Dichapetalum cymulosum* - 7
Fabaceae 5	Ebenaceae 12	*Microdesmis haumaniana* - 7
Ebenaceae 5	Annonaceae 10	4 species with 6

SITE NO. 192: Ndakan (ndakani)
LOCALITY: Central African Republic. Ndakan: Guibourtia forest, along Sango River.
COORDINATES: 02°22' N, 16°09' E
COLLECTORS: A. Gentry, D. Thomas, D. Harris, W. Bromley
VOUCHERS: 62560 - 62667
DATES: 8 - 10 May 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 390 m
ANN. RAINFALL: 1,400 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 43.58



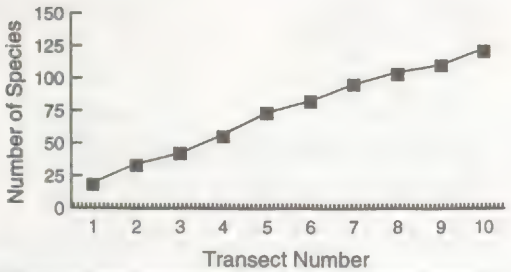
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	58	37	2	97
NUMBER OF INDIVIDUALS	212	146	2	360
NUMBER OF FAMILIES	24	14	1	33
BASAL AREA	6.65	0.17	0.0069	6.83 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 15	Fabaceae 80	*Diospyros iturensis* - 59
Annonaceae 8	Ebenaceae 65	*Ancistrophyllum* sp.1 - 42
Euphorbiaceae 8	Arecaceae 42	*Millettia* sp.1 - 19
Apocynaceae 7	Euphorbiaceae 25	*Airyantha schweinfurthii* - 15
Celastraceae 6	Apocynaceae 19	*Grossera paniculata* - 12
Ebenaceae 4	Tiliaceae 16	*Millettia* sp.3 - 11
Icacinaceae 4	Annonaceae 13	*Dewevrea bilabiata* - 10
Menispermaceae 4	Celastraceae 11	*Guibourtia demeusei* - 10
Moraceae 4	Combretaceae 10	*Landolphia* sp.1 - 8
Tiliaceae 4	Ixonanthaceae 10	2 species with 7

SITE NO. 193: Ndakan upland (ndakanni)
LOCALITY: Central African Republic. Ndakan: upland forest 3 km E of Sango River.
COORDINATES: 02°22' N, 16°19' E
COLLECTORS: A. Gentry, D. Thomas, D. Harris, M. Fay, W. Bromley
VOUCHERS: 62668 - 62786
DATES: 10 - 12 May 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 400 m
ANN. RAINFALL: 1,400 mm *
SOIL DATA: Not available
AREA SAMPLED: 800 m²
FISHER'S ALPHA: 60.92



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	87	34	0	121
NUMBER OF INDIVIDUALS	289	94	0	383
NUMBER OF FAMILIES	31	15	0	39
BASAL AREA	7.33	0.15	0	7.48 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 13	Apocynaceae 76	*Voacanga* sp.1 - 34
Euphorbiaceae 11	Fabaceae 54	*Rinorea* sp.1 - 30
Meliaceae 9	Ebenaceae 33	*Pleiocarpa* sp.1 - 30
Apocynaceae 9	Violaceae 30	*Diospyros bipindensis* - 21
Annonaceae 7	Euphorbiaceae 22	*Haumania danckelmaniana* - 18
Olacaceae 7	Annonaceae 19	*Amphimas comosa* - 17
Rubiaceae 6	Marantaceae 18	*Thomandersia* sp.1 - 14
Ebenaceae 5	Acanthaceae 14	*Polyalthia* sp.1 - 11
Celastraceae 4	Meliaceae 14	*Microdesmis puberula* - 9
Combretaceae 4	Combretaceae 11	Apocynaceae gen.4 sp.1 - 8

SITE NO. 194: Belinga (belinga)
LOCALITY: Gabon. Belinga, near Congo border.
COORDINATES: 01°09' N, 13°12' E
COLLECTORS: A. Gentry
VOUCHERS: 33588 - 33707
DATES: 26 - 28 July 1981

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 740 - 770 m
ANN. RAINFALL: 1,800 mm
SOIL DATA: Not available
AREA SAMPLED: 500 m²
FISHER'S ALPHA: 62.18

	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	74	15	0	89
NUMBER OF INDIVIDUALS	171	27	0	198
NUMBER OF FAMILIES	24	7	0	26
BASAL AREA	2.93	0.034	0	2.96 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Euphorbiaceae 10	Euphorbiaceae 30	*Trichilia gilgiana* - 13
Fabaceae 8	Sterculiaceae 19	*Rinorea* sp.1 - 10
Rubiaceae 7	Fabaceae 18	*Jollydora duparquetiana* - 8
Apocynaceae 6	Meliaceae 18	*Leptonychia batangensis* - 7
Clusiaceae 5	Apocynaceae 13	*Cavacoa quintasii* - 7
Sapindaceae 5	Violaceae 11	*Calpocalyx dinklagei* - 7
Sterculiaceae 5	Sapindaceae 10	*Scaphopetalum thonneri* - 7
4 families with 4	Rubiaceae 9	*Dichostemma glaucescens* - 6
	3 families with 8	*Plagiostyles africana* - 6
		Polyalthia suaveolens - 6

SITE NO. 195: Makokou 1 (makokou1)
LOCALITY: Gabon. Ogové-Ivindo: M'Passa field station, near Makokou on Rivière l'Ivindo.
COORDINATES: 00°34' N, 12°52' E
COLLECTORS: A. Gentry
VOUCHERS: 33046 - 33295
DATES: 26 June - 10 July 1981

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 480 m
ANN. RAINFALL: 1,755 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 87.45

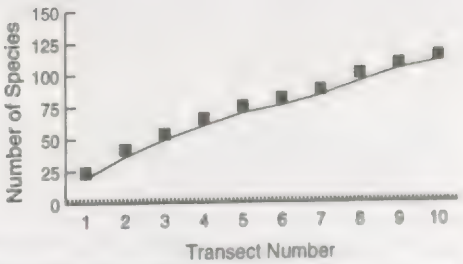
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	86	48	0	134
NUMBER OF INDIVIDUALS	224	98	0	322
NUMBER OF FAMILIES	28	18	0	40
BASAL AREA	3.31	0.36	0	3.67 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 24	Fabaceae 80	*Scorodophloeus zenkeri* - 28
Apocynaceae 12	Euphorbiaceae 30	*Dichostemma glaucescens* - 24
Annonaceae 8	Apocynaceae 24	*Dalhousiea africana* - 12
Celastraceae 8	Annonaceae 18	*Baphia bipindensis* - 8
Euphorbiaceae 7	Burseraceae 16	*Santiria* sp.1 - 8
Burseraceae 6	Sapindaceae 16	*Heisteria parvifolia* - 7
Sterculiaceae 6	Celastraceae 15	*Polyalthia suaveolens* - 7
Dichapetalaceae 5	Sterculiaceae 13	*Morinda lucida* - 6
Sapindaceae 5	Dichapetalaceae 11	*Pancovia pedicellaris* - 6
3 families with 4	2 families with 10	4 species with 5

SITE NO. 196: Makokou 2 (makokou2)
LOCALITY: Gabon. Ogové-Ivindo: M'Passa field station, near Makokou on Riviere l'Ivindo.
COORDINATES: 00°34' N, 12°52' E
COLLECTORS: A. Gentry
VOUCHERS: 33329 - 33494
DATES: 15 - 21 July 1981

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 480 m
ANN. RAINFALL: 1,755 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 67.47



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	76	39	1	116
NUMBER OF INDIVIDUALS	230	78	1	309
NUMBER OF FAMILIES	28	16	1	37
BASAL AREA	3.46	0.12	0.0005	3.58 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 22	Fabaceae 77	*Scorodolphloeus zenkeri* - 28
Apocynaceae 8	Olacaceae 17	*Diogoa zenderi* - 13
Sapindaceae 7	Sapindaceae 17	*Centroplacus glaucinus* - 12
Celastraceae 6	Apocynaceae 17	*Thommandersia hensii* - 12
Burseraceae 5	Euphorbiaceae 16	*Quassia africana* - 11
Euphorbiaceae 5	Connaraceae 15	*Plagiostyles africana* - 9
Olacaceae 5	Burseraceae 13	*Dalhousiea africana* - 9
Annonaceae 4	Pandaceae 13	*Hemandradenia* sp.1 - 8
Connaraceae 4	Acanthaceae 12	*Santiria* sp.1 - 8
Dichapetalaceae 4	Simaroubaceae 12	*Pycnobotrya nitida* - 8

SITE NO. 197: Beza 1 (beza1)
LOCALITY: Madagascar. Toliara: Beza Mahafaly Special Nature Reserve.
COORDINATES: 23°37'-40' S, 44°33'-38' E
COLLECTORS: P. B. Phillipson
VOUCHERS: 1646 - 3684
DATES: April - May 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical dry forest
ELEVATION: 150 m
ANN. RAINFALL: 600 mm
SOIL DATA: Deep river sand
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 8.58

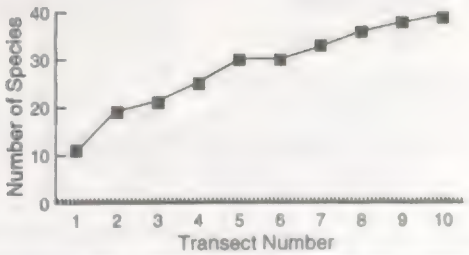
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	31	not recorded	not recorded	31
NUMBER OF INDIVIDUALS	310	not recorded	not recorded	310
NUMBER OF FAMILIES	19	not recorded	not recorded	19
BASAL AREA	3.32	not recorded	not recorded	3.32 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 4	Euphorbiaceae 66	*Grewia franciscana* - 56
Tiliaceae 3	Tiliaceae 61	*Azima tetracantha* - 36
Asclepiadaceae 2	Salvadoraceae 58	*Euphorbia tirucalli* - 36
Bignoniaceae 2	Fabaceae 56	*Tamarindus indica* - 36
Capparaceae 2	Rubiaceae 16	*Suregada decidua* - 30
Euphorbiaceae 2	Bignoniaceae 11	*Salvadora angustifolia* - 22
Indet. 2	Capparaceae 10	*Enterospermum* aff. *pruinosum* - 9
Rubiaceae 2	Asclepiadaceae 9	*Rhigozum madagascariense* - 9
Salvadoraceae 2	Portulacaceae 4	*Dichrostachys decaryana* - 8
	4 families with 3	4 species with 7

SITE NO. 198: Beza 2 (beza2)
LOCALITY: Madagascar. Toliara: Beza Mahafaly, Special Nature Reserve
COORDINATES: 23°37' - 40' S, 44°33 '- 38' E
COLLECTORS: P.B. Phillipson
VOUCHERS: 1653 - 2784
DATES: April - May 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical dry forest
ELEVATION: 150 - 200 m
ANN. RAINFALL: 600 mm
SOIL DATA: Sandstone derived
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 10.79



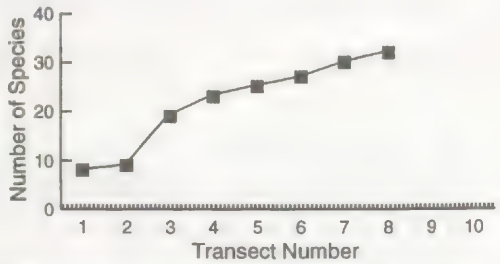
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	40	not recorded	not recorded	40
NUMBER OF INDIVIDUALS	429	not recorded	not recorded	429
NUMBER OF FAMILIES	21	not recorded	not recorded	21
BASAL AREA	1.21	not recorded	not recorded	1.21 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 7	Burseraceae 116	*Cedrelopsis grevei* - 77
Burseraceae 6	Ptaeroxylaceae 77	*Commiphora orbicularis* - 67
Euphorbiaceae 3	Tiliaceae 48	*Rhigozum madagascariense* - 39
Anacardiaceae 2	Bignoniaceae 39	*Grewia franciscana* - 34
Apocynaceae 2	Fabaceae 33	*Commiphora simplicifolia* - 21
Capparaceae 2	Euphorbiaceae 26	*Euphorbia tirucalli* - 20
Indet. 2	Portulacaceae 19	*Commiphora aprevalii* - 19
Tiliaceae 2	Ebenaceae 18	*Talinella grevei* - 19
	Anacardiaceae 15	*Diospyros latispathulata* - 18
	2 families with 6	*Grewia grevei* - 14

SITE NO. 199: Beza 3 (beza3)
LOCALITY: Madagascar. Toliara: Beza Mahafaly Special Nature Reserve.
COORDINATES: 23°37-40' S, 44°33-38' E
COLLECTORS: P.B. Phillipson
VOUCHERS: 1666 - 2779
DATES: April - May 1987

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical dry forest
ELEVATION: 150 - 200 m
ANN. RAINFALL: 600 mm
SOIL DATA: Sandstone derived
AREA SAMPLED: 800 m^2
FISHER'S ALPHA: 9.33



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	32	not recorded	not recorded	32
NUMBER OF INDIVIDUALS	279	not recorded	not recorded	279
NUMBER OF FAMILIES	16	not recorded	not recorded	279
BASAL AREA	1.07	not recorded	not recorded	1.07 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Burseraceae 5	Burseraceae 72	*Cedrelopsis grevei* - 57
Fabaceae 5	Ptaeroxylaceae 57	*Commiphora orbicularis* - 50
Euphorbiaceae 4	Bignoniaceae 31	*Rhigozum madagascariense* - 31
Combretaceae 3	Combretaceae 31	*Terminalia tricristata* - 14
Tiliaceae 3	Fabaceae 25	*Euphorbia tirucalli* - 13
Apocynaceae 2	Euphorbiaceae 21	*Commiphora aprevalii* - 13
	Tiliaceae 13	*Terminalia ulexoides* - 13
	Didiereaceae 9	*Albizia tulearensis* - 11
	Apocynaceae 4	*Alluaudia procera* - 9
	2 families with 3	2 species with 7

SITE NO. 200: Ankarafantsika (ankarif)
LOCALITY: Madagascar. Mahajanga: Ankarafantsika near Ampijoroa Forestry Station.
COORDINATES: 16°19' S, 46°49' E
COLLECTORS: A. Gentry, G. Schatz
VOUCHERS: 62026 - 62145
DATES: 6 - 8 April 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical moist forest
ELEVATION: 70 - 100 m
ANN. RAINFALL: 1,400 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 38.06

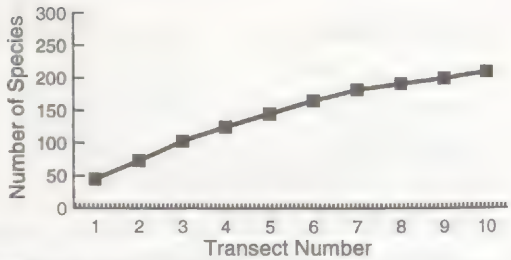
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	68	28	0	96
NUMBER OF INDIVIDUALS	310	126	0	436
NUMBER OF FAMILIES	33	17	0	42
BASAL AREA	3.74	0.18	0	3.92 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 10	Euphorbiaceae 66	*Drypetes madagascariensi* - 58
Sterculiaceae 5	Fabaceae 44	*Elaeocarpus* cf. *subserretus* - 29
Tiliaceae 5	Grossulariaceae 30	*Grevea* sp.1 - 29
Burseraceae 4	Elaeocarpaceae 29	*Triclisia* sp.*2* - 21
Meliaceae 4	Menispermaceae 29	*Trilepisium* sp.1 - 20
Sapindaceae 4	Moraceae 20	*Albizia* sp.1 - 13
Combretaceae 4	Tiliaceae 20	Myrtaceae gen.1 sp.1 - 11
Rubiaceae 4	Sterculiaceae 19	*Diospyros* sp.1 - 11
5 families with 3	Combretaceae 15	*Landolphia* sp.1 - 11
	Myrtaceae 15	*Byttneria* sp.1 - 10

SITE NO. 201: Nosy Mangabe (nosymang)
LOCALITY: Madagascar. Toamasina: Nosy Mangabe, 5 km from Maroantsetra in the Bay of Antungil.
COORDINATES: 15°30' S, 49°46' E
COLLECTORS: G. Schatz, A. Gentry
VOUCHERS: Schatz 1962 - 2299
DATES: 13 - 23 April 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical wet forest
ELEVATION: 250 - 300 m
ANN. RAINFALL: 3000 - 4000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 92.66



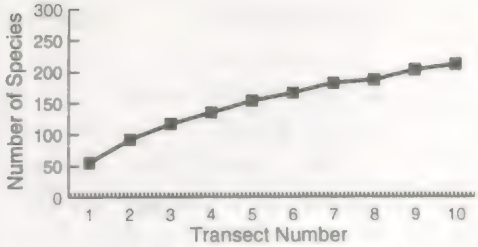
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	173	35	2	210
NUMBER OF INDIVIDUALS	672	125	4	801
NUMBER OF FAMILIES	46	19	1	55
BASAL AREA	7.50	0.13	0.0034	7.64 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 17	Euphorbiaceae 82	*Mascarenhasia arborescens* - 34
Ebenaceae 13	Rubiaceae 80	Euphorbiaceae gen.1 sp.1 - 30
Rubiaceae 12	Apocynaceae 78	Meliaceae gen.1 sp.1 - 30
Apocynaceae 10	Meliaceae 53	*Rothmannia* sp.1 - 27
Euphorbiaceae 10	Myrtaceae 50	*Malleastrum mocquerysii* - 22
Flacourtiaceae 9	Lauraceae 46	Euphorbiaceae gen.4 sp.1 - 17
Sapindaceae 9	Ebenaceae 42	*Savia platyrachis* - 16
Clusiaceae 9	Clusiaceae 38	*Landolphia* sp.5 - 13
Myrtaceae 9	Agavaceae 27	3 species with 11
3 families with 7	2 families with 19	

SITE NO. 202: Perinet Forestry Station (perinet)
LOCALITY: Madagascar. Toamasina: Perinet Forestry Station, forest above pisciculture lake.
COORDINATES: 18°55' S, 48°25' E
COLLECTORS: A. Gentry, L. Dorr, L. Barnett, A. Rakotozafy
VOUCHERS: 52318 - 52650
DATES: 1 - 6 November 1985

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane moist forest
ELEVATION: 980 m
ANN. RAINFALL: 1,200 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 101.51



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	174	39	0	213
NUMBER OF INDIVIDUALS	605	121	0	726
NUMBER OF FAMILIES	46	20	0	55
BASAL AREA	5.32	0.077	0	5.40 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 18	Euphorbiaceae 101	*Domohinea* sp.1 - 35
Euphorbiaceae 16	Rubiaceae 87	*Gaertnera* sp.2 - 35
Rubiaceae 16	Cyatheaceae 59	*Amyrea* sp.1 - 26
Apocynaceae 12	Lauraceae 37	*Cyathea* sp.1 - 26
Myrtaceae 10	Sterculiaceae 36	*Cephalostachyum vigueri* - 24
Sterculiaceae 8	Myrtaceae 35	*Chrysophyllum bolvinianum* - 17
Clusiaceae 8	Poaceae 30	*Hildegardia perrieri* - 16
Cyatheaceae 8	Moraceae 23	*Dichapetalum* sp.1 - 15
Moraceae 8	Fabaceae 21	*Danais* sp.1 - 14
Myrsinaceae 7	Apocynaceae 21	*Eugenia* sp.1 - 12

SITE NO. 203: Brise Fer (brisefer)
LOCALITY: Mauritius. Mascarene Islands: Sheltered valley E of Piton Brise Fer, W extremity of island's central plateau.
COORDINATES: 20°22'37" S, 57°25'36" E
COLLECTORS: D. Lorence
VOUCHERS: None
DATES: 1979

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane wet forest
ELEVATION: 550 m
ANN. RAINFALL: 2,400 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 17.09

	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	67	3	0	70
NUMBER OF INDIVIDUALS	993	17	0	1010
NUMBER OF FAMILIES	31	3	0	32
BASAL AREA	8.12	0.02	0	8.14 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Myrtaceae 11	Myrtaceae 332	*Psidium cattleianum* - 262
Flacourtiaceae 8	Flacourtiaceae 138	*Brythrospermum verticillatum* - 78
Rubiaceae 7	Euphorbiaceae 86	*Ligustrum walkeri* - 77
Euphorbiaceae 4	Oleaceae 78	*Diospyros tessellaria* - 59
Sapotaceae 3	Ebenaceae 59	*Tabernaemontana persicariifolia* - 51
10 families with 2	Apocynaceae 58	*Securinega durissima* - 48
	Rubiaceae 45	*Labourdonnaisia glauca* - 28
	Sapotaceae 44	*Moniamiastrum globosum* - 24
	Celastraceae 35	*Erythrospermum* var. *amplifolium* - 23
	Melastomataceae 26	*Elaeodendron orientale* - 22

SITE NO. 204: Omo Forest Reserve (omofor)
LOCALITY: Nigeria. Ogun: Omo Forest Reserve, 15 km NE of Saw Mill near Oloji, border with Oyo State.
COORDINATES: 07° N, 05° E
COLLECTORS: A. Gentry, G. Pilz
VOUCHERS: 32715 - 32833
DATES: 16 - 18 June 1981

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 150 m
ANN. RAINFALL: 1,800 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 25.20

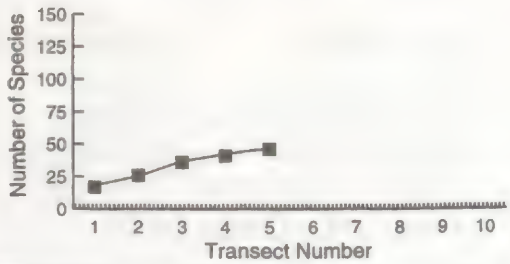
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	43	27	0	70
NUMBER OF INDIVIDUALS	307	73	0	380
NUMBER OF FAMILIES	18	17	0	32
BASAL AREA	3.82	0.059	0	3.88 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 8	Apocynaceae 119	*Tabernaemontana penduliflora* - 109
Euphorbiaceae 7	Ebenaceae 70	*Diospyros alboflavescens* - 54
Ebenaceae 6	Olacaceae 27	*Strombosia pustulata* - 27
Celastraceae 5	Euphorbiaceae 23	*Neuropeltis acuminata* - 16
Fabaceae 5	Fabaceae 18	*Drypetes molunduana* - 13
Apocynaceae 4	Convolvulaceae 16	*Coryanthes pachyceras* - 11
Connaraceae 4	Annonaceae 13	*Ioedes klaineana* - 9
Annonaceae 3	Rubiaceae 13	*Octolobus angustatus* - 8
4 families with 2	Celastraceae 11	*Baphia nitida* - 7
	Orchidaceae 11	4 species with 6

SITE NO. 205: Pande Forest Reserve (pande)
LOCALITY: Tanzania. Dar es Salaam Region: Pande Forest Reserve, 26 km NW of Dar es Salaam.
COORDINATES: 06°40' S, 39°05' E
COLLECTORS: A. Gentry, L. Mwasumbi
VOUCHERS: 62328 - 62375
DATES: 30 April 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest.
ELEVATION: 80 m
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 500 m^2
FISHER'S ALPHA: 22.76



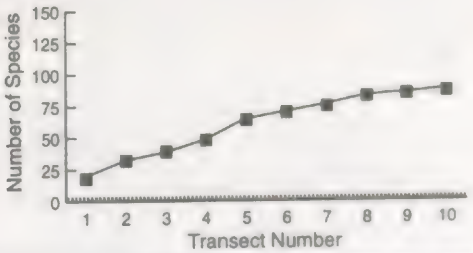
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	24	22	0	46
NUMBER OF INDIVIDUALS	93	56	0	149
NUMBER OF FAMILIES	11	9	0	16
BASAL AREA	0.92	0.093	0	1.02 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Euphorbiaceae 7	Fabaceae 41	*Scorodophloeus fischeri* - 29
Fabaceae 7	Sapotaceae 21	*Manilkara discolor* - 19
Combretaceae 6	Apocynaceae 20	*Salacia* sp.1 - 13
Apocynaceae 5	Euphorbiaceae 15	*Hunteria* sp.1 - 6
Annonaceae 3	Celastraceae 14	*Landolphia* sp.1 - 6
Sapindaceae 3	Combretaceae 13	*Landolphia* sp.2 - 5
5 families with 2	Sapindaceae 5	*Erythrococca* sp.1 - 5
	4 families with 3	*Drypetes* sp.1 - 4
		3 species with 3

SITE NO. 206: Pugu Forest Reserve (pugu)
LOCALITY: Tanzania. Pwani Region: Pugu Forest Reserve, 25 km SW of Dar es Salaam, near Kisarawe.
COORDINATES: 06°50' S, 39°05' E
COLLECTORS: A. Gentry, L. Mwasumbi
VOUCHERS: 62218 - 62327
DATES: 27 - 29 April 1988

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical dry forest
ELEVATION: 150 - 200 m
ANN. RAINFALL: 1,236 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 32.70



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	46	41	0	87
NUMBER OF INDIVIDUALS	293	142	0	435
NUMBER OF FAMILIES	17	17	0	31
BASAL AREA	2.91	0.46	0	3.37 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 11	Violaceae 166	*Rinorea angustifolia* - 154
Sterculiaceae 10	Fabaceae 103	*Scorodophloeus fischeri* - 33
Rubiaceae 8	Apocynaceae 17	*Baphia puguensis* - 29
Apocynaceae 6	Rubiaceae 16	*Millettia puguensis* - 15
Celastraceae 6	Sterculiaceae 15	*Saba florida* - 11
Annonaceae 4	Combretaceae 14	*Millettia* sp.1 - 11
Combretaceae 4	Annonaceae 13	*Combretum* sp.1 - 8
Loganiaceae 4	Celastraceae 13	*Landolphia* sp.1 - 7
3 families with 3	Loganiaceae 12	*Rinorea brachypetala* - 7
	Arecaceae 11	2 species with 6

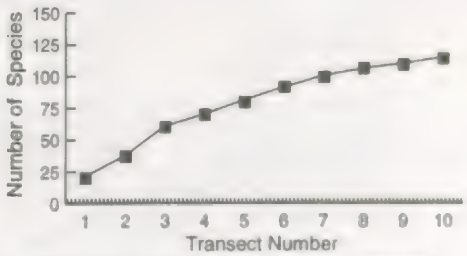
Section 6. Location of transects from Asia, Australia, and Oceania, sites 207–226.

207 – Davies River State Forest, Australia
208 – Avalanche, India
209 – Mudumalai 1, India
210 – Mudumalai 2, India
211 – Nadugani, India
212 – Chiba, Japan
213 – Bako National Park, Malaysia
214 – Genting Highlands, Malaysia
215 – Pasoh 30, Malaysia
216 – Pasoh 40, Malaysia
217 – Semengoh Forest Preserve, Malaysia
218 – Rivière de Pirogues, New Caledonia
219 – Baitete, Papua New Guinea
220 – Varirata National Park, Papua New Guinea
221 – Palanan, Philippines
222 – Kenting National Park, Taiwan
223 – Nanjen Shan Ecological Area, Taiwan
224 – Khao Yai National Park, Thailand
225 – Sakaerat 1, Thailand
226 – Sakaerat 2, Thailand

SITE NO. 207: Davies River State Forest (davies)
LOCALITY: Australia. Queensland: Davies River State Forest, 15 km SE of Mareeba.
COORDINATES: 17°05' S, 145°34' E
COLLECTORS: A. Gentry
VOUCHERS: 34346 - 34461
DATES: 2 - 3 September 1981

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane wet forest
ELEVATION: 740 - 800 m
ANN. RAINFALL: 2,300 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 58.53



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	98	16	1	115
NUMBER OF INDIVIDUALS	321	36	2	359
NUMBER OF FAMILIES	35	10	1	43
BASAL AREA	5.64	0.049	0.015	5.70 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 15	Rubiaceae 36	*Brackenridgea australiana* - 23
Myrtaceae 10	Lauraceae 30	*Antirhea myrtoides* - 23
Proteaceae 9	Myrtaceae 28	*Cyathea rebeccae* - 16
Rubiaceae 8	Ochnaceae 23	*Sterculia laurifolia* - 12
Elaeocarpaceae 7	Proteaceae 23	*Flindersia bourjotiana* - 11
Monimiaceae 5	Sapotaceae 20	*Planchonella* sp. nov. - 10
Sapindaceae 5	Cyatheaceae 16	*Eugenia angophoroides* - 8
Rutaceae 4	Rutaceae 16	*Rockinghamia angustifolia* - 8
Sapotaceae 4	Euphorbiaceae 15	*Xanthophyllum octandrum* - 8
Menispermaceae 4	2 families with 14	*Apodytes brachystylis* - 7

SITE NO. 208: Avalanche (avalanch)
LOCALITY: India. Tamil Nadu: Avalanche "shola" forest, 20 km S of Ooty, near Emarald.
COORDINATES: 11°18' N, 76°35' E
COLLECTORS: A. Gentry, H.S. Suresh, J. Rudhakrishan, R. Prabhakar
VOUCHERS: 66369 - 66449
DATES: 13 - 14 June 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical lower montane moist forest
ELEVATION: 2,100 m
ANN. RAINFALL: 1,400 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 22.65

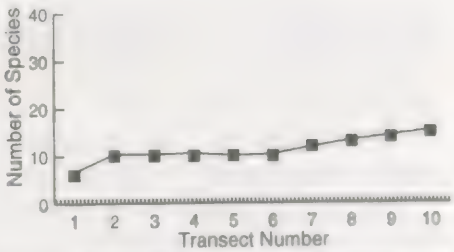
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	61	7	1	69
NUMBER OF INDIVIDUALS	436	17	1	454
NUMBER OF FAMILIES	25	4	1	29
BASAL AREA	8.12	0.026	0.002	8.15 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 13	Rubiaceae 213	*Psychotria* sp.1 - 85
Rubiaceae 9	Lauraceae 88	Rubiaceae gen.1 sp.1 - 54
Myrtaceae 6	Sapotaceae 27	*Lasianthus* sp.1 - 46
Aquifoliaceae 5	Myrtaceae 23	Sapotaceae gen.1 sp.1 - 27
Symplocaceae 4	Aquifoliaceae 13	*Psychotria* sp.2 - 18
Indet. 3	Piperaceae 13	*Cinnamomum* sp.3 - 16
Piperaceae 3	Celastraceae 11	*Litsea* sp.3 - 15
Pittosporaceae 3	Sabiaceae 9	*Litsea* sp.1 - 13
Daphniphyllaceae 2	Indet. 7	*Alseodaphne* sp.1 - 12
Theaceae 2	Pittosporaceae 7	Celastraceae gen.1 sp.1 - 11

SITE NO. 209: Mudumalai 1 (mudumal1)
LOCALITY: India. Tamil Nadu: Mudumalai, 50 ha vegetation plot.
COORDINATES: 11°36' N, 76°32' E
COLLECTORS: A. Gentry, H.S. Suresh, R. Armuga'm
VOUCHERS: 66212 - 66226
DATES: 10 June 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane dry forest
ELEVATION: 1,000 m
ANN. RAINFALL: 1,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 5.42



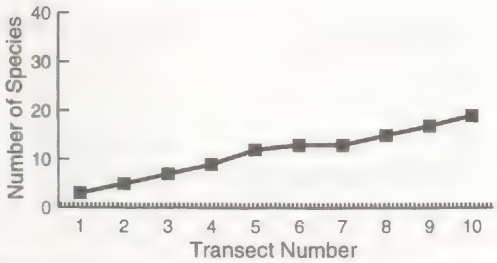
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	15	0	0	15
NUMBER OF INDIVIDUALS	81	0	0	81
NUMBER OF FAMILIES	11	0	0	11
BASAL AREA	3.68	0	0	3.68 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Bignoniaceae 2	Combretaceae 29	*Lagerstroemia lanceolata* - 21
Combretaceae 2	Lythraceae 21	*Terminalia tomentosa* - 15
Sterculiaceae 2	Malvaceae 9	*Anogeissus latifolia* - 14
Verbenaceae 2	Verbenaceae 6	*Kydia calycina* - 9
	Fabaceae 5	*Cassia fistula* - 5
	Euphorbiaceae 3	*Tectona grandis* - 4
	Sterculiaceae 3	*Phyllanthus emblica* - 3
	Bignoniaceae 2	*Grewia tiliifolia* - 2
		Eriolaena quinquelocularis - 2

SITE NO. 210: Mudumalai 2 (mudumal2)
LOCALITY: India. Tamil Nadu: Mudumalai, 50 ha vegetation plot.
COORDINATES: 11°36' N, 76°32' E
COLLECTORS: A. Gentry, H.S. Suresh, R. Armega'm
VOUCHERS: 66212 - 66226
DATES: 10 June 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane dry forest
ELEVATION: 1,000 m
ANN. RAINFALL: 1,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 12.12



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	19	0	0	19
NUMBER OF INDIVIDUALS	46	0	0	46
NUMBER OF FAMILIES	12	0	0	12
BASAL AREA	3.99	0	0	3.99 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Combretaceae 3	Combretaceae 19	*Anogeissus latifolia* - 12
Euphorbiaceae 3	Lythraceae 5	*Terminalia tomentosa* - 6
Fabaceae 2	Euphorbiaceae 4	*Lagerstroemia lanceolata* - 5
Rubiaceae 2	Rubiaceae 4	*Randia dumetorum* - 3
Verbenaceae 2	Fabaceae 3	*Phyllanthus emblica* - 2
	Verbenaceae 3	*Diospyros montana* - 2
	Ebenaceae 2	*Tectona grandis* - 2
	Sterculiaceae 2	*Dalbergia latifolia* - 2
		*Eriolaena quinqueloculari*s - 2

SITE NO. 211: Nadugani (nadugani)
LOCALITY: India. Tamil Nadu: Nadugani, ca. 20 km W of Gudalur, border with Kerala State.
COORDINATES: 11°27' N, 76°23' E
COLLECTORS: A. Gentry, H.S. Suresh, J. Radhakrishnan, R. Prabhakar
VOUCHERS: 66236 - 66360
DATES: 11 - 12 June 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane wet forest
ELEVATION: 680 - 700 m
ANN. RAINFALL: ca. 2,500 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 72.28

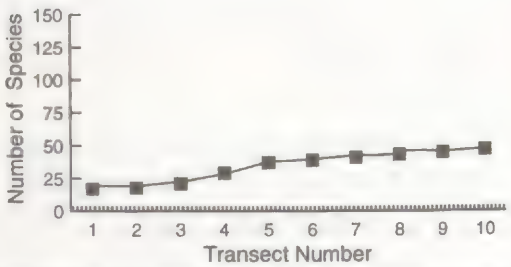
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	87	19	0	106
NUMBER OF INDIVIDUALS	203	38	0	241
NUMBER OF FAMILIES	32	13	0	38
BASAL AREA	3.82	0.11	0	3.94 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Euphorbiaceae 17	Euphorbiaceae 52	*Myristica* sp.1 - 16
Lauraceae 8	Ebenaceae 30	*Diospyros* sp.4 - 14
Anacardiaceae 5	Myristicaceae 21	*Diospyros* sp.1 - 13
Annonaceae 5	Meliaceae 17	Euphorbiaceae gen.1 sp.1 - 11
Arecaceae 5	Fabaceae 13	*Dalbergia* sp.1 - 8
Ebenaceae 5	Anacardiaceae 12	*Amara* sp.1 - 8
Meliaceae 5	Arecaceae 10	*Pinanga* sp.1 - 5
Myristicaceae 5	Rutaceae 8	*Mallotus phillipensis* - 5
3 families with 4	Lauraceae 8	*Croton malabaricus* - 5
	Myrsinaceae 6	*Baccourea courtallensis* - 5

SITE NO. 212: Chiba (chiba)
LOCALITY: Japan. Near Amata-Kominata in Chiba Prefecture.
COORDINATES: 35°09' N, 140°09' E
COLLECTORS: A. Gentry
VOUCHERS: None
DATES: August 1990

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Warm temperate wet forest
ELEVATION: 270 m
ANN. RAINFALL: 2,600 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 14.87



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	39	8	0	47
NUMBER OF INDIVIDUALS	306	30	0	336
NUMBER OF FAMILIES	22	8	0	28
BASAL AREA	7.48	0.038	0	7.52 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fagaceae 7	Theaceae 126	*Eurya japonica* - 80
Ericaceae 4	Fagaceae 78	*Cleyera japonica* - 27
Lauraceae 4	Apocynaceae 22	*Quercus acuta* - 26
Anacardiaceae 3	Ericaceae 20	*Trachelospermum asiaticum* - 22
Theaceae 3	Lauraceae 13	*Quercus salicina* - 21
Aquifoliaceae 2	Rosaceae 10	*Camelia japonica* - 19
Araliaceae 2	Myristicaceae 7	*Castanopsis cuspidata* - 18
Oleaceae 2	Pinaceae 7	*Pieris japonica* - 12
	Araliaceae 6	*Pourthiaea villosa* - 10
	Oleaceae 6	*Quercus lauca* - 10

SITE NO. 213: Bako National Park (bakosar)
LOCALITY: Malaysia. Sarawak: Ashton permanent plot number 2.
COORDINATES: 01°45' N, 110°25' E
COLLECTORS: A. Gentry
VOUCHERS: 33789 - 33963
DATES: 13 - 14 August 1981

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical wet forest
ELEVATION: 80 - 100 m
ANN. RAINFALL: 4,000 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 81.04

	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	112	23	1	136
NUMBER OF INDIVIDUALS	308	44	1	353
NUMBER OF FAMILIES	35	11	1	41
BASAL AREA	3.93	0.09	0.002	4.02 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Myristicaceae 11	Euphorbiaceae 44	*Gonocaryum gracile* - 23
Annonaceae 10	Dipterocarpaceae 42	*Ganua pierrei* - 23
Dipterocarpaceae 9	Icacinaceae 29	*Koilodepas longifolium* - 21
Euphorbiaceae 9	Sapotaceae 27	*Dryanobalanops beccarii* - 13
Ebenaceae 7	Myristicaceae 23	*Shorea falcifera* - 10
Rubiaceae 7	Annonaceae 20	*Vatica oblongifolia* - 9
Anacardiaceae 6	Burseraceae 16	*Pimeleodendron griffithianum* - 7
Burseraceae 6	Rubiaceae 14	*Strombosia lucida* - 7
Moraceae 6	Myrtaceae 11	*Cyathostemma excelsa* - 7
Myrtaceae 6	Ebenaceae 9	4 species with 6

SITE NO. 214: Genting Highlands (genting)
LOCALITY: Malaysia. Selangor: Genting Highlands, ca. 60 km N of Kuala Lumpur, Awana Hotel Jungle Track.
COORDINATES: 03°58' N, 101°38' E
COLLECTORS: A. Gentry, J. LaFrankie, S. Appanah
VOUCHERS: 67007 - 67237
DATES: 4 - 5 July 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane wet forest
ELEVATION: 880 - 900 m
ANN. RAINFALL: 2,000 mm+
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 182.36

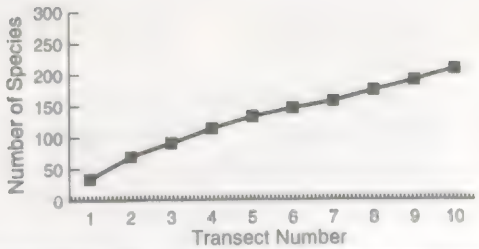
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	162	31	1	194
NUMBER OF INDIVIDUALS	272	73	1	346
NUMBER OF FAMILIES	48	18	1	54
BASAL AREA	5.18	0.13	0.0028	5.31 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 14	Arecaceae 65	*Melastoma* sp.1 - 14
Arecaceae 13	Melastomataceae 26	Arecaceae gen.1 sp.1 - 13
Euphorbiaceae 13	Clusiaceae 19	*Licuala* sp.1 - 9
Myrtaceae 12	Myrtaceae 19	*Gironniera subsequalis* - 9
Melastomataceae 11	Lauraceae 18	*Daemonorops geniculatus* - 8
Clusiaceae 10	Euphorbiaceae 17	Arecaceae gen.2 sp.1 - 7
Ebenaceae 10	Ebenaceae 12	*Helicia attenua* - 7
Rubiaceae 8	Burseraceae 11	*Pinanga* sp.1 - 7
Burseraceae 7	Rubiaceae 10	*Calamus* cf. *tumidus* - 6
Moraceae 7	Ulmaceae 9	3 species with 5

SITE NO. 215: Pasoh 30 (pasoh30)
LOCALITY: Malaysia. Negeri Sembilan: Pasoh forest reserve, near Simpang Pertang. 200 km SE of Kuala Lumpur.
COORDINATES: 03° N, 102°20' E
COLLECTORS: A. Gentry, J. LaFrankie
VOUCHERS: 66778 - 66847
DATES: 27 - 28 June 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 100 m
ANN. RAINFALL: 2,054 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 194.54



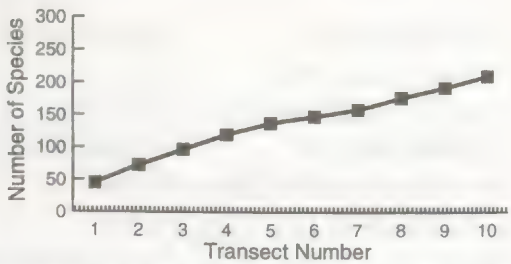
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	153	56	1	210
NUMBER OF INDIVIDUALS	263	114	1	378
NUMBER OF FAMILIES	41	21	1	52
BASAL AREA	2.68	0.16	0.06	2.90 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Annonaceae 25	Annonaceae 36	*Daemonorops verticillata* - 13
Euphorbiaceae 16	Euphorbiaceae 36	*Rinorea anguifera* - 9
Fabaceae 14	Burseraceae 26	*Combretum* sp.1 - 8
Burseraceae 13	Fabaceae 23	*Gironniera parviflora* - 7
Meliaceae 9	Arecaceae 20	*Dacryodes rugosa* - 7
Rubiaceae 9	Connaraceae 15	*Dacryodes rostrata* - 6
Lauraceae 8	Meliaceae 14	*Tetracera* sp.1 - 6
Myrtaceae 8	Rubiaceae 14	*Cleistanthus maingayi* - 6
Dipterocarpaceae 7	Myristicaceae 12	4 species with 5
3 families with 6	2 families with 11	

SITE NO. 216: Pasoh 40 (pasoh40)
LOCALITY: Malaysia. Negeri Sembilan: Pasoh forest reserve, near Sampang Pertang, 200 km SE of Kuala Lumpur.
COORDINATES: 03° N, 102°20' E
COLLECTORS: A. Gentry, J. LaFrankie
VOUCHERS: 66848 - 66912
DATES: 28 - 30 June 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 100 m
ANN. RAINFALL: 2,054 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 219.75



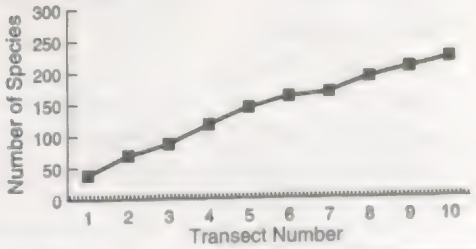
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	164	55	1	220
NUMBER OF INDIVIDUALS	271	108	1	380
NUMBER OF FAMILIES	40	19	1	50
BASAL AREA	3.96	0.14	0.0028	4.10 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Annonaceae 21	Annonaceae 39	*Byttneria maingayi* - 12
Euphorbiaceae 20	Burseraceae 30	*Gironniera parvifolia* - 11
Fabaceae 15	Euphorbiaceae 30	*Daemonorops verticillosa* - 9
Dipterocarpaceae 13	Fabaceae 29	*Rinorea anguifera* - 9
Rubiaceae 13	Dipterocarpaceae 24	*Dacryodes rugosa* - 9
Burseraceae 12	Arecaceae 23	*Caesalpinia* sp.1 - 5
Meliaceae 10	Rubiaceae 21	*Monocarpia marginalis* - 5
Arecaceae 8	Connaraceae 15	*Bauhinia* sp.1 - 5
Connaraceae 8	Sterculiaceae 14	*Enicosanthum fuscum* - 5
Clusiaceae 7	2 families with 13	*Dipterocarpus cornutus* - 5

SITE NO. 217: Semengoh Forest Preserve (semengoh)
LOCALITY: Malaysia. Sarawak: Semengoh Forest Preserve, 12 mi. S of Kuching.
COORDINATES: 01°50' N, 110°05' E
COLLECTORS: A. Gentry
VOUCHERS: 33983 - 34282
DATES: 16 - 17 August 1981

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical wet forest
ELEVATION: 100 m
ANN. RAINFALL: 4,167 mm
SOIL DATA: Not available (clay loam soil)
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 164.34



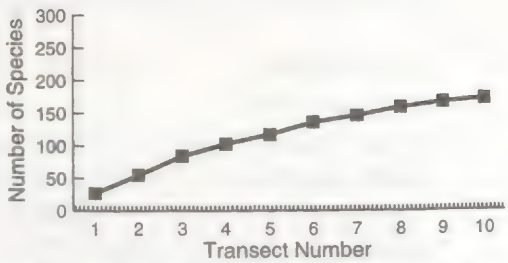
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	201	22	0	223
NUMBER OF INDIVIDUALS	449	25	0	474
NUMBER OF FAMILIES	43	12	0	50
BASAL AREA	4.55	0.053	0	4.60 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Euphorbiaceae 23	Dipterocarpaceae 54	*Teijsmanniodendron simplicifolia* - 30
Myristicaceae 15	Euphorbiaceae 50	*Gamua pierrei* - 16
Burseraceae 14	Sapotaceae 43	*Shorea subcylindrica* - 12
Dipterocarpaceae 14	Verbenaceae 30	*Shorea multiflora* - 9
Annonaceae 14	Lauraceae 23	*Allanthospermum borneense* - 9
Sapotaceae 13	Myristicaceae 23	*Kayea myrtifolia* - 9
Lauraceae 13	Annonaceae 20	*Vatica nitens* - 9
Clusiaceae 10	Burseraceae 18	*Pouteria malaccensis* - 8
Meliaceae 9	Clusiaceae 18	3 species with 7
Myrtaceae 7	2 families with 13	

SITE NO. 218: Rivière des Pirogues (newcaldo)
LOCALITY: New Caledonia. Rivière des Pirogues, E of Nouméa.
COORDINATES: 22°10' S, 166°50' E
COLLECTORS: A. Gentry, G. McPherson, M. Crosby
VOUCHERS: 34497 - 34708
DATES: 6 - 10 September 1981

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical lower montane wet forest
ELEVATION: 400 m
ANN. RAINFALL: 2,200 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 76.04



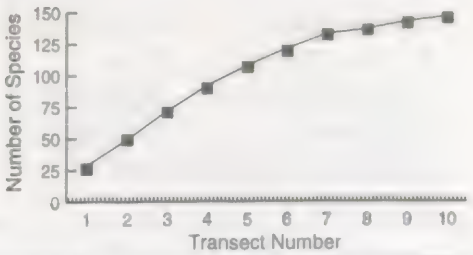
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	151	21	0	172
NUMBER OF INDIVIDUALS	608	46	0	654
NUMBER OF FAMILIES	48	9	0	51
BASAL AREA	4.47	0.12	0	4.59 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Apocynaceae 14	Fagaceae 66	*Nothofagus discoidea* - 40
Clusiaceae 11	Clusiaceae 65	*Basselinia pancheri* - 35
Sapotaceae 9	Rubiaceae 55	*Deplanchea* sp.1 - 35
Rubiaceae 9	Arecaceae 52	*Garcinia amplexicaulis* - 30
Araliaceae 7	Araliaceae 47	*Gardenia aubreyi* - 26
Sapindaceae 7	Apocynaceae 38	*Meryta coriacea* - 20
Lauraceae 7	Bignoniaceae 35	*Nothofagus equilateralis* - 16
Euphorbiaceae 6	Pandanaceae 20	*Calophyllum caledonicum* - 15
8 families with 5	Sapindaceae 18	*Alstonia* cf. *comptonii* - 13
	Sapotaceae 18	2 species with 11

SITE NO. 219: Baitete (baitete)
LOCALITY: Papua New Guinea. Madang: Baitete, ca. 20 km N of Christenson Research Institute N of Madang, hills overlooking coast.
COORDINATES: 05°10' S, 145°48' E
COLLECTORS: A. Gentry
VOUCHERS: 67272 - 67461
DATES: 10 - 11 July 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical moist forest
ELEVATION: 200 m
ANN. RAINFALL: 3,375 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 121.44



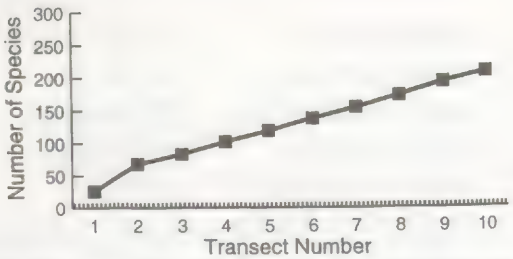
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	104	35	8	147
NUMBER OF INDIVIDUALS	205	68	13	286
NUMBER OF FAMILIES	42	21	5	56
BASAL AREA	3.94	0.13	0.37	4.44 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Annonaceae 13	Myristicaceae 24	*Licuala* sp.1 - 12
Moraceae 10	Arecaceae 23	*Merremia peltata* - 11
Myristicaceae 9	Annonaceae 20	*Gymnacranthera paniculata* var. *zipperiana* - 10
Meliaceae 8	Euphorbiaceae 19	*Pimelodendron amboinicum* - 8
Euphorbiaceae 8	Moraceae 15	*Strychnos minor* - 8
Arecaceae 7	Meliaceae 14	*Gomphandra montana* - 7
Burseraceae 4	Icacinaceae 13	*Horsfieldia spicata* - 5
Clusiaceae 4	Loganiaceae 13	*Ficus* sp.3 - 5
Loganiaceae 4	Convolvulaceae 11	9 species with 4
Rubiaceae 4	Rubiaceae 9	

SITE NO. 220: Varirata National Park (varirata)
LOCALITY: Papua New Guinea. Central: Varirata National Park, 30 km SE of Port Moresby.
COORDINATES: 09°30' S, 147°30' E
COLLECTORS: A. Gentry, M. Hopkins
VOUCHERS: 67247 - 67268, 67545 - 67767
DATES: 9 July, 20 - 22 July 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Tropical premontane dry forest
ELEVATION: 740 m
ANN. RAINFALL: 1,000 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 142.9



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	175	28	6	209
NUMBER OF INDIVIDUALS	410	58	6	474
NUMBER OF FAMILIES	40	19	4	53
BASAL AREA	4.63	0.11	0.0046	4.74 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 20	Lauraceae 63	*Popowia* sp.1 - 24
Meliaceae 29	Meliaceae 52	*Cryptocarya* sp.2 - 13
Elaeocarpaceae 14	Elaeocarpaceae 34	Lauraceae gen.2 sp.1 - 13
Arecaceae 11	Annonaceae 31	*Platea* sp.1 - 11
Myrtaceae 11	Euphorbiaceae 25	*Chisocheton* cf. *guarea* - 11
Myristicaceae 10	Myristicaceae 23	*Canarium* sp.2 - 9
Indet 9	Arecaceae 22	*Sloanea* sp.4 - 9
Euphorbiaceae 9	Myrtaceae 22	*Litsea* sp.1 - 8
Moraceae 9	Burseraceae 17	*Aglaia* sp.2 - 8
2 families with 8	Pandanaceae 15	3 species with 7

SITE NO. 221: Palanan (palanan)
LOCALITY: Philippines. San Isidro: Isabela, hill N of Diego.
COORDINATES: 17°08' N, 122°31' E
COLLECTORS: L.L. Co
VOUCHERS: 3413 - 3506
DATES:

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical wet forest
ELEVATION: 10 - 50 m
ANN. RAINFALL: 2,400 mm *
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 97.34

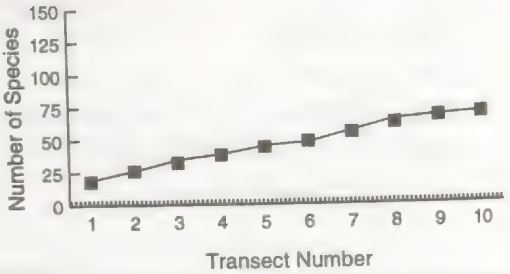
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	130	10	4	144
NUMBER OF INDIVIDUALS	309	14	7	330
NUMBER OF FAMILIES	38	7	2	42
BASAL AREA	8.85	0.03	0.99	9.87 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Rubiaceae 10	Euphorbiaceae 28	*Strombosia philippinensis* - 14
Sapotaceae 9	Ebenaceae 20	*Enicosanthum grandifolium* - 14
Meliaceae 8	Anacardiaceae 19	*Barringtonia pterita* - 14
Fabaceae 7	Annonaceae 19	*Shorea contorta* - 13
Indet. 7	Apocynaceae 19	*Antidesma catanduanense* - 10
Ebenaceae 7	Meliaceae 16	*Mangifera monandra* - 10
Euphorbiaceae 7	Rubiaceae 16	*Diospyros ahernii* - 10
Arecaceae 6	Dipterocarpaceae 14	*Tabernaemontana pandacaqui* - 7
Apocynaceae 6	Olacaceae 14	*Omphalea bracteata* - 6
Myrsinaceae 6	Lecythidaceae 14	6 species with 5

SITE NO. 222: Kenting National Park (kenting)
LOCALITY: Taiwan. Pintung County: Kenting National Park, S tip of Taiwan, Heng Chun Botanical Garden, remnant natural forest.
COORDINATES: 21°55' N, 120°50' E
COLLECTORS: A. Gentry, Wen-Liang Chion, Tse-Ka Chang, Ge Chen-Cheen
VOUCHERS: 67867 - 68037
DATES: 28 - 31 July 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical wet forest
ELEVATION: 200 m
ANN. RAINFALL: 2,500 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 23.93



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	45	20	4	69
NUMBER OF INDIVIDUALS	324	72	8	404
NUMBER OF FAMILIES	21	13	2	32
BASAL AREA	4.21	0.10	0.24	4.55 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Euphorbiaceae 12	Ebenaceae 188	*Diospyros maritima* - 176
Moraceae 6	Euphorbiaceae 50	*Palaquium formosanum* - 24
Lauraceae 5	Fabaceae 34	*Macaranga tanatius* - 18
Arecaceae 4	Sapotaceae 26	*Pueraria montana* - 16
Fabaceae 4	Moraceae 11	*Caesalpinia crista* - 13
Apocynaceae 3	Malpighiaceae 10	*Drypetes littoralis* - 10
Ebenaceae 3	Sapindaceae 10	*Hiptage bengalensis* - 10
Vitaceae 3	Araceae 9	*Champereia manillana* - 9
5 families with 2	Santalaceae 9	*Diospyros discolor* - 9
	Arecaceae 7	*Allocasia macrorhiza* - 9

SITE NO. 223: Nanjen Shan Ecological Protected Area (nanjensh)
LOCALITY: Taiwan. Pintung County: Nanjen Shan Ecological Protected Area, near Chufenyku, Kenting National Park, mature forest.
COORDINATES: 22° N, 120°50' E
COLLECTORS: A. Gentry, Wen-Liang Chiou, Tse Kou Chang, Ge Chen-Cheen
VOUCHERS: 67906 - 68009
DATES: 28 - 30 July 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical wet forest
ELEVATION: 310 m
ANN. RAINFALL: 2,500 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 25.88

	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	72	11	2	85
NUMBER OF INDIVIDUALS	608	52	5	665
NUMBER OF FAMILIES	28	9	2	36
BASAL AREA	4.28	.044	.0044	4.33 m^2

DOMINANT FAMILIES NUMBER OF SPECIES.	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Lauraceae 9	Theaceae 109	*Illicium arborescens* - 91
Aquifoliaceae 8	Illiciaceae 91	*Gordonia axillaris* - 50
Fagaceae 8	Fagaceae 64	*Eurya hayatai* - 36
Rubiaceae 5	Aquifoliaceae 61	*Osmanthus marginata* - 31
Theaceae 5	Lauraceae 60	*Syzygium euphlebium* - 30
6 families with 3	Oleaceae 37	*Antidesma huranense* - 27
	Euphorbiaceae 35	*Ilex cochinchinensis* - 26
	Myrtaceae 35	*Castanopsis carlesii* - 23
	Rubiaceae 22	*Daphniphyllum glaucescens* - 20
	Daphniphyllaceae 20	*Beilschmiedia erythrophloeia* - 18

SITE NO. 224: Khao Yai National Park (khaoyai)
LOCATION: Thailand. Khao Yai National Park, road to Heaw Suwat Falls, evergreen forest.
COORDINATES: 14°20' N, 101°50' E
COLLECTORS: A. Gentry, C. Niyomdham
VOUCHERS: 66473 - 66635
DATES: 17 - 18 June 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical wet forest
ELEVATION: 700 m
ANN. RAINFALL: ca. 2,300 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m²
FISHER'S ALPHA: 96.23

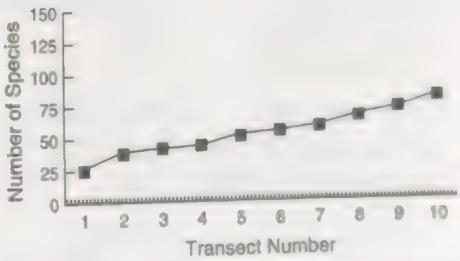
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	96	48	1	145
NUMBER OF INDIVIDUALS	214	117	7	338
NUMBER OF FAMILIES	40	25	1	55
BASAL AREA	4.66	0.21	0.017	4.89 m²

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Euphorbiaceae 13	Euphorbiaceae 30	*Daemonorops schmidtiana* - 28
Annonaceae 12	Arecaceae 29	*Symplocos cochinchinensis* - 14
Myrtaceae 7	Lauraceae 22	*Aglaia* cf. *trichilia* - 12
Lauraceae 6	Meliaceae 20	*Cinnamomum iners* - 9
Rubiaceae 6	Annonaceae 18	*Baccourea* sp.1 - 9
Fabaceae 5	Apocynaceae 17	*Phoebe lanceolata* - 7
Meliaceae 5	Symplocaceae 14	*Trachelosperma* sp.1 - 7
Apocynaceae 5	Myristicaceae 13	*Congea* sp.1 - 7
Myristicaceae 5	Rubiaceae 13	*Knema elegans* - 6
Verbenaceae 5	Verbenaceae 12	*Paranephelium xestophyllum* - 6

SITE NO. 225: Sakaerat 1 (sakaerat)
LOCALITY: Thailand. Sakaerat, mixed deciduous forest protected for 20 years by fence.
COORDINATES: 14°30' N, 102° E
COLLECTORS: A. Gentry, C. Niyomdham
VOUCHERS: 66644 - 66730
DATES: 20 - 21 June 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical moist forest
ELEVATION: 400 m
ANN. RAINFALL: ca. 1,500 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 30.49



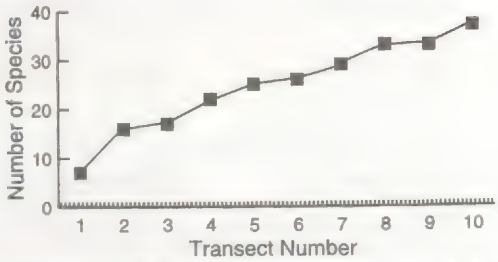
	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	56	25	0	81
NUMBER OF INDIVIDUALS	351	53	0	404
NUMBER OF FAMILIES	25	14	0	31
BASAL AREA	3.93	0.13	0	4.06 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 12	Fabaceae 105	*Cratoxylon cochinchinensis* - 71
Rubiaceae 8	Clusiaceae 71	*Pterocarpus macrocarpus* - 50
Asclepiadaceae 7	Rubiaceae 35	*Chukrasia velutina* - 30
Euphorbiaceae 7	Meliaceae 31	*Micromelum integerrima* - 22
Apocynaceae 4	Dipterocarpaceae 26	*Xylia xylocarpa* - 21
Annonaceae 3	Rutaceae 23	*Shorea obtusa* - 20
Santalaceae 3	Asclepiadaceae 18	*Pavetta* sp.1 - 12
Verbenaceae 3	Euphorbiaceae 16	*Gardenia sootepensis* - 8
11 families with 2	Apocynaceae 9	*Dalbergia cochinchinensis* - 8
	Sterculiaceae 7	*Antidesma ghaesembille* - 7

SITE: NO. 226: Sakaerat 2 (sakaera2)
LOCALITY: Thailand. Sakaerat, open savanna forest.
COORDINATES: 14°30' N, 102° E
COLLECTORS: A. Gentry, C. Niyomdham
VOUCHERS: 66731 - 66748
DATES: 21 June 1989

ECOLOGICAL AND FLORISTIC DATA

LIFE ZONE: Subtropical moist forest
ELEVATION: 400 m
ANN. RAINFALL: ca. 1,500 mm
SOIL DATA: Not available
AREA SAMPLED: 1,000 m^2
FISHER'S ALPHA: 17.08



	TREES/SHRUBS	LIANAS	HEMIEPIPHYTES	TOTAL
NUMBER OF SPECIES	37	0	0	37
NUMBER OF INDIVIDUALS	132	0	0	132
NUMBER OF FAMILIES	15	0	0	15
BASAL AREA	2.81	0	0	2.81 m^2

DOMINANT FAMILIES NUMBER OF SPECIES	DOMINANT FAMILIES NUMBER OF INDIVIDUALS	DOMINANT SPECIES NUMBER OF INDIVIDUALS
Fabaceae 8	Dipterocarpaceae 53	*Shorea obtusa* - 44
Clusiaceae 5	Fabaceae 28	*Pterocarpus macrocarpus* - 10
Rubiaceae 4	Rubiaceae 12	*Pterocarpus magnicarpus* - 8
Verbenaceae 4	Clusiaceae 8	*Dipterocarpus intricatus* - 7
Dipterocarpaceae 3	Verbenaceae 8	*Chukrasia velutina* - 5
Euphorbiaceae 3	Euphorbiaceae 6	*Mitragyna brunonis* - 5
Ebenaceae 2	Meliaceae 5	*Clerodendron* sp.1 - 5
	Ebenaceae 4	*Antidesma ghaesembille* - 4
	Irvingiaceae 2	*Albizzia odoratissima* - 4
		4 species with 3

Literature Cited

Aymard, G. & N. Cuello (eds.). In prep. Floristic Composition of Venezuelan Forests Utilizing 0.1-ha Plots.

Baker, H. G. 1970. Evolution in the tropics. Biotropica 2: 101–111.

Baker, O. E. 1936. Atlas of American Agriculture. United States Government Printing Office, Washington, D.C.

Boyle, B. 1996. Changes on Altitudinal and Latitudinal Gradients in Neotropical Montane Forests. Ph.D. Thesis, Washington University, St. Louis, Missouri.

Brako, L. & J. Zarucchi. 1993. Catalogue of the Flowering Plants and Gymnosperms of Peru. Monographs in Systematic Botany from the Missouri Botanical Garden 45.

Clinebell, R. R., II, O. L. Phillips, A. H. Gentry, N. Stark & H. Zuuring. 1995. Prediction of neotropical tree and liana species richness from soil and climatic data. Biodiversity and Conservation 4: 56–90.

Condit, R. 1997. Tropical Forest Census Plots. Springer-Verlag, Berlin.

_____, S. P. Hubbell, J. LaFrankie, R. Sukumar, N. Manokaran, R. B. Foster & P. S. Ashton. 1996. Species-area and species-individual relationships for tropical trees—A comparison of three 50-ha plots. Journal of Ecology 84: 549–562.

_____, R. B. Foster, S. P. Hubbell, R. Sukumar, E. G. Leigh, N. Manokaran, S. Loo de Lao, J. V. LaFrankie & P. S. Ashton. 1998. Assessing forest diversity on small plots: Calibration using species-individual curves from 50-ha plots. Pp. 247–268 in F. Dallmeier & J. Comiskey (eds.), Forest Biodiversity, Research, Monitoring and Modeling: Conceptual Background and Old World Case Studies. Man and the Biosphere Series, Vol. 20. UNESCO and Parthenon, Paris.

Currie, D. J. 1991. Energy and large-scale patterns of animal- and plant-species richness. American Naturalist 137: 27–49.

_____ & V. Paquin. 1987. Large-scale biogeographical patterns of species richness of trees. Nature 329: 326–327.

Dallmeier, F. & J. Comiskey (eds.). 1998a. Forest Biodiversity, Research, Monitoring and Modeling: Conceptual Background and Old World Case Studies. Man and the Biosphere Series, Vol. 20. UNESCO and Parthenon, Paris.

_____ & _____ (eds.). 1998b. Forest Biodiversity in North, Central and South America, and the Caribbean: Research and Monitoring. Man and the Biosphere Series, Vol. 21. UNESCO and Parthenon, Paris.

Díaz P., A. 1969. Atlas de Colombia. Instituto Geográfico "Augustín Codazzi", 2a Edición, Bogotá.

Dodson, C. & A. H. Gentry. 1978. Flora of the Río Palenque Science Center, Ecuador. Selbyana 2: 291–299.

_____ & _____. 1991. Biological extinction in western Ecuador. Annals of the Missouri Botanical Garden 78: 273–295.

_____, _____ & F. M. Valverde. 1985. Flora of Jauneche, Los Ríos, Ecuador. Banco Central del Ecuador, Quito.

Duellman, W. E. 1991. Report on Biodiversity at Cuzco Amazonico, Peru. Center for Neotropical Diversity, Museum of Natural History, The University of Kansas, Lawrence.

Duivenvoorden, J. F. & H. Lips. 1995. A land-ecological study of soils, vegetation, and plant diversity in Colombian Amazonia. Tropenbos Series 12: 1–438.

Emmons, L. H. & A. H. Gentry. 1983. Tropical forest structure and the distribution of gliding and prehensile-tailed vertebrates. American Naturalist 121: 513–524.

Enquist, B. J. & K. J. Niklas. 2001. Invariant scaling relations across tree-dominated communities. Nature 410: 655–660.

Erwin, T. 1984. Tambopata Reserved Zone, Madre de Dios, Peru: History and description of the reserve. Revista Peruana Entomología 27: 1–8.

Faber-Langendoen, D. & A. H. Gentry. 1991. The structure and diversity of rain forests at Bajo Calima, Chocó region, western Colombia. Biotropica 23: 2–11.

Farley, A. L. 1979. Atlas of British Columbia. University of British Columbia Press.

Fisher, A. G. 1960. Latitudinal variation in organic diversity. Evolution 14: 64–81.

Fisher, R. A., A. S. Corbet & C. B. Williams. 1943. The relation between the number of species and the number of individuals in a random sample of an animal population. Journal of Ecology 12: 42–58.

Forero, E. & A. H. Gentry. 1988. Neotropical plant distribution patterns with emphasis on northwestern South America: A preliminary overview. Pp. 21–37 in W. B. Heyer & P. E. Vanzolini (eds.), Proceedings of a Workshop on Neotropical Distribution Patterns. Academia Brasileira de Ciências, Rio de Janeiro.

_____ & _____. 1989. Lista Anotada de las Plantas del Departamento del Chocó, Colombia. Biblioteca José Jeronimo Triana 10.

Foster, R. B. & A. H. Gentry. 1991. Plant list, Appendix 9. Pp. 100–103 in T. A. Parker III & B. Bailey (eds.), A Biological Assessment of the Alto Madidi Region. RAP Working Papers 1. Conservation International, Washington, D.C.

_____, _____ & S. Beck. 1991. Plant lists, Appendices 7 and 8. Pp. 75–99 and 104–106 in T. A. Parker III & B. Bailey (eds.), A Biological Assessment of the Alto Madidi Region. RAP Working Papers 1. Conservation International, Washington, D.C.

_____, T. A. Parker III, A. H. Gentry, L. H. Emmons, A. Chicchón, T. Schulenberg, L. Rodríguez, G. Lamas, H. Ortega, J. Icochea, W. Wust, M. Romo, A. A. Castillo, O. Phillips, C. Reynel, A. Kratter, P. K. Donahue & L. J. Barkley. 1994. The Tambopata-Candamo Reserved Zone of Southeastern Perú: A Biological Assessment. RAP Working Papers 6. Conservation International, Washington, D.C.

Gentry, A. H. 1977. New species of Leguminosae, Lauraceae, and Monimiaceae, and new combinations in Bignoniaceae from western Ecuador. Selbyana 2: 39–45.

_____. 1982a. Patterns of neotropical plant species diversity. Evolutionary Biology 15: 1–84.

_____. 1982b. Neotropical floristic diversity. Annals of the Missouri Botanical Garden 69: 557–593.

_____. 1983a. Lianas and the "paradox" of contrasting latitudinal gradients in wood and litter production. Tropical Ecology 24: 63–67.

_____. 1983b. Dispersal ecology and diversity in neotropical forest communities. Sonderbände des Naturwissenschaftlichen Vereins in Hamburg 7: 303–314.

_____. 1986a. Species-richness and floristic composition of Chocó region plant communities. Caldasia 15: 71–91.

_____. 1986b. An overview of neotropical phytogeographic patterns with an emphasis on Amazonia. Pp. 19–35 in Anales 1er Simpósio del Trópico Hdmedo. Dpto. de Difisão de Tecnologia, Brasília, D.F.

_____. 1986c. Sumario de patrones fitogeográficas neotropicales y las implicaciones para el desarrollo de la Amazonia. Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales 16: 101–116.

_____. 1988a. Changes in plant community diversity and floristic composition on environmental and geographical gradients. Annals of the Missouri Botanical Garden 75: 1–34.

_____. 1988b. Tree species richness of upper Amazonian forests. Proceedings of the National Academy of Science, U.S.A. 85: 156–159.

_____. 1988c. New species and a new combination for plants from trans-Andean South America. Annals of the Missouri Botanical Garden 75: 1429–1439.

_____. 1989. Speciation in tropical forests. Pp. 113–134 in L. B. Holm-Nielsen, I. C. Nielsen & H. Balslev (eds.), Tropical Forests: Botanical Dynamics, Speciation, and Diversity. Academic Press, London.

_____ (ed.). 1990. Four Neotropical Rainforests. Yale Univ. Press, New Haven.

_____. 1991a. The distribution and evolution of climbing plants. Pp. 3–49 in F. Putz & H. Mooney (eds.), The Biology of Vines. Cambridge Univ. Press, Cambridge.

_____. 1991b. Breeding and dispersal systems of lianas. Pp. 393–423 in F. Putz & H. Mooney (eds.), The Biology of Vines. Cambridge Univ. Press, Cambridge.

_____. 1992a. Diversity and floristic composition of Andean forests of Peru and adjacent countries: Implications for their conservation. Memorias del Museo de Historia Natural (Lima) 21: 11–19.

_____. 1992b. Tropical forest biodiversity: Distributional patterns and their conservational significance. Oikos 63: 19–28.

_____. 1992c. *Exarata* (Bignoniaceae), a new genus from the Chocó region of Ecuador and Colombia. Systematic Botany 17: 503–507.

_____. 1993a. Diversity and floristic composition of lowland forest in Africa and South America. Pp. 500–546 in P. Goldblatt (ed.), Biological Relationships between Africa and South America. Yale Univ. Press, New Haven.

_____. 1993b. Overview of the Peruvian Flora. Pp. xxix–xl in L. Brako & J. Zarucchi (eds.), Catalogue of the Flowering Plants and Gymnosperms of Peru. Monographs in Systematic Botany from the Missouri Botanical Garden 45.

_____. 1994. The importance of the Explorer's Inn Reserve permanent plots. Pp. 55–57 in R. B. Foster, T. A. Parker III, A. H. Gentry, L. H. Emmons, A. Chicchón, T. Schulenberg, L. Rodríguez, G. Lamas, H. Ortega, J. Icochea, W. Wust, M. Romo, A. A. Castillo, O. Phillips, C. Reynel, A. Kratter, P. K. Donahue & L. J. Barkley, The Tambopata-Candamo Reserved Zone of Southeastern Peru: A Biological Assessment. RAP Working Papers 6. Conservation International, Washington, D.C.

_____. 1995a. Patterns of diversity and floristic composition in neotropical montane forests. Pp. 103–126 in S. P. Churchill, H. Balslev, E. Forero & J. L. Luteyn (eds.), Biodiversity and Conservation of Neotropical Montane Forests. The New York Botanical Garden, New York.

_____. 1995b. Diversity and floristic composition of neotropical dry forests. Pp. 146–194 in S. H. Bullock, H. Mooney & E. Medina (eds.), Seasonally Dry Tropical Forests. Cambridge Univ. Press, New York.

_____. 1996. Species expirations and current extinction rates: A review of the evidence. Pp. 17–16 in R. C. Szaro & D. W. Johnston (eds.), Biodiversity in Managed Landscapes: Theory and Practice. Oxford Univ. Press, New York.

_____ & C. H. Dodson. 1987. Contribution of non-trees to species richness of tropical rain forest. Biotropica 19: 149–156.

_____ & L. H. Emmons. 1987. Geographical variation in fertility, phenology, and composition in the understory of neotropical forests. Biotropica 19: 216–227.

_____ & R. Ortíz. 1993. Patrones de composición florística en la Amazonia Peruana. Pp. 155–166 in R. Kalliola, M. Puhakka & W. Danjoy (eds.), Amazonia Peruana-Vegetación Húmeda Tropical en el Llano Subandino. PAUT & ONERN, Jyväsklä, Finland.

_____ & R. Vásquez. 1993. A Field Guide to the Families and Genera of Woody Plants of Northwest South America (Colombia, Ecuador, Peru) with Supplementary Notes on Herbaceous Taxa. Conservation International, Washington, D.C.

Givnish, T. J. 1999. On the causes of gradients in tropical tree diversity. Journal of Ecology 87: 193–210.

Hegarty, E. E. 1991. Vine-host interactions. Pp. 357–375 in F. Putz & H. Mooney (eds.), The Biology of Vines. Cambridge Univ. Press, Cambridge.

_____ & G. Caballé. 1991. Distribution and abundance of vines in forest communities. Pp. 313–335 in F. Putz & H. Mooney (eds.), The Biology of Vines. Cambridge Univ. Press, Cambridge.

Holdridge, L. 1967. Life Zone Ecology. Tropical Science Center, San José, Costa Rica.

_____, W. Grenke, W. Hatheway, T. Liang & J. Tosi. 1971. Forest Environments in Tropical Life Zones: A Pilot Study. Pergamon Press, Oxford.

Huston, M. 1979. The general hypothesis of species diversity. American Naturalist 113: 81–101.

_____. 1980. Soil nutrients and tree species richness in Costa Rican forests. Journal of Biogeography 7: 147–157.

_____. 1994. Biological Diversity. Cambridge Univ. Press, Cambridge.

Instituto Geográfico del Perú. 1989. Atlas del Perú. IGP, Lima.

Instituto Geográfico Militar del Ecuador. 1977. Atlas Geográfico del República del Ecuador. IGME, Quito.

Jackson, S. P. 1961. Climatological Atlas of Africa. Government Printer, Pretoria.

Kapos, V. 1982. An Ecological Investigation of Sclerophylly in Two Tropical Forests. Ph.D. Dissertation, Washington University, St. Louis.

Keel, S., A. H. Gentry & L. Spinzi. 1993. Using vegetation analysis to facilitate the selection of conservation sites in eastern Paraguay. Conservation Biology 7: 66–75.

Latham, R. E. & R. E. Ricklefs. 1993. Global patterns of tree species richness in moist forests: Energy-diversity theory does not account for variation in species richness. Oikos 67: 325–333.

Lieberman, D., M. Lieberman, R. Peralta & G. Hartshorn. 1996. Tropical forest structure and composition on a large-scale altitudinal gradient in Costa Rica. Journal of Ecology 84: 137–152.

Lorence, D. H. & R. W. Sussman. 1986. Exotic species invasion into Mauritius wet forest remnants. Journal of Tropical Ecology 2: 147–162.

_____ & _____. 1988. Diversity, density, and invasion in a Mauritian wet forest. Monographs in Systematic Botany from the Missouri Botanical Garden. 25: 187–204.

Lott, E. J., S. H. Bullock & J. A. Solis-Magallanes. 1987. Floristic diversity and structure of upland and arroyo forests of coastal Jalisco. Biotropica 19: 228–235.

Lugo, A. 1988. Diversity of tropical species: Questions that elude answers. Biology International Special Issue 19. IUBS and UNESCO, Paris.

MacArthur, R. 1965. Patterns of species diversity. Biological Reviews 210: 510–533.

Mittermeier, R. A., N. Myers, J. B. Thomsen, G. A. B. da Fonseca & S. Olivieri. 1998. Biodiversity hotspots and major tropical wilderness areas: Approaches to setting conservation priorities. Conservation Biology 12: 515–520.

Olson, D. M. & E. Dinerstein. 1998. The global 200: A representation approach to conserving the Earth's most biologically valuable ecoregions. Conservation Biology 12: 502–515.

Peixoto, A. L. & A. H. Gentry. 1990. Diversidade e composição floristica da mata de tabuleiro na Reserva Florestal de Linhares (Espirito Santo, Brasil). Revista Brasileira Botanica 13: 19–25.

Peters, C., A. H. Gentry & R. Mendelsohn. 1989. Valuation of an Amazon rainforest. Nature 339: 655–656.

Phillips, O. L. 1993. The potential for harvesting fruits in tropical forests: New data from Amazonian Peru. Biodiversity and Conservation 2: 18–38.

_____. 1996. Long-term environmental change in tropical forests: Increasing tree turnover. Environmental Conservation 23: 225–238.

_____ & A. H. Gentry. 1993a. The useful plants of Tambopata, Peru: I. Statistical hypotheses tests with a

new quantitative technique. Economic Botany 47: 15–32.

_____ & _____. 1993b. The useful plants of Tambopata, Peru: II. Additional hypothesis testing in quantitative ethnobotany. Economic Botany 47: 33–43.

_____ & _____. 1994. Increasing turnover through time in tropical forests. Science 263: 954–958.

_____ & P. H. Raven. 1997. A strategy for sampling neotropical forests. In: A. Gibson (ed.), Neotropical Biodiversity and Conservation. University of California–Los Angeles.

_____, P. Hall, A. H. Gentry, R. Vásquez & S. Sawyer. 1994a. Dynamics and species richness of tropical rain forests. Proceedings of the National Academy of Sciences, U.S.A. 91: 2805–2809.

_____, A. H. Gentry, C. Reynel, P. Wilkin & C. Gálvez-Durand B. 1994b. Quantitative ethnobotany and Amazonian conservation. Conservation Biology 8: 225–248.

_____, P. Nuñez V. & M. Timaná. 1998a. Tree mortality and collecting botanical vouchers in tropical forests. Biotropica 30: 298–305.

_____, Y. Malhi, N. Higuchi, W. F. Laurance, P. Nuñez V., R. Vásquez, S. G. Laurance, L. V. Ferreira, M. Stern, S. Brown & J. Grace. 1998b. Changes in the carbon balance of tropical forest: Evidence from long-term plots. Science 282: 439–442.

_____, D. Wood, A. Reategui Ismodes, M. López & A. José Farfan. 1999. Proyecto Biodiversidad y Comunidad: La metodología de las evaluaciones sociológicas, botánicas y forestales de los recursos del bosque. Instituto para Investigaciones de la Amazonia Peruana, Puerto Maldonado, Peru.

Pianka, L. 1966. Latitudinal gradients in species diversity: A review of concepts. American Naturalist 100: 33–46.

Pimm, S. L. & P. H. Raven. 2000. Biodiversity—Extinction by numbers. Nature 403: 843–845.

Pitman, N. C. A., J. Terborgh, M. R. Silman & P. Núñez V. 1999. Tree species distributions in an upper Amazonian forest. Ecology 80: 2651–2666.

_____, _____ & _____ et al. 2001. Dominance and distribution of tree species in upper Amazonian terra firme forests. Ecology 82: 2101–2117.

Putz, F. E. 1983. Liana biomass and leaf area of a "Terra Firme" forest in the Río Negro River basin, Venezuela. Biotropica 15: 185–189.

_____. 1984a. The natural history of lianas on Barro Colorado Island. Ecology 65: 1713–1724.

_____. 1984b. How trees avoid and shed lianas. Biotropica 16: 19–23.

Rand McNally. 1952. Commercial Atlas and Marketing Guide. Rand McNally, New York, Chicago, and San Francisco.

Ricklefs, R. E. & D. Schluter (eds.). 1993. Species Diversity in Ecological Communities: Historical and Geographical Perspectives. Univ. Chicago Press, Chicago.

Rose, S. 1996. A Classification System for Mapping Tropical Rain Forest Biodiversity. Ph.D. Thesis, School of Geography, University of Leeds, Leeds.

Rosenzweig, M. 1968. Net primary productivity of terrestrial communities. Prediction from climatological data. American Naturalist 102: 67–74.

Ruokolainen, K., R. Vásquez, O. L. Phillips, R. Ortiz & L. Rebata. 1995. Tree species distribution in Peruvian high diversity rain forests: Correlation with edaphic factors and satellite image patterns. In: Floristic and Environmental Variation in the Rain Forests of Peruvian Amazonia. K. Ruokolainen, Ph.D. Thesis, Report No. 50. Dept. Biology, University of Turku, Turku, Finland.

Ryan, P. 1972. Encyclopaedia of Papua and New Guinea. Melbourne Univ. Press, Carlton, Victoria.

Stark, N. 1970. Nutrient content of plants and soils from Brazil and Surinam. Biotropica 2: 51–60.

_____. 1971a. Nutrient Cycling I. Elemental content of soils from South America. International Journal of Tropical Ecology 12: 24–50.

_____. 1971b. Nutrient Cycling II. Nutrient distribution in Amazonian vegetation. International Journal of Tropical Ecology 12: 177–201.

_____. 1978. Man, forests and the biological life of a soil. Biotropica 10: 1–20.

Stevens, G. C. 1989. The latitudinal gradient in geographical range: How so many species exist in the tropics. American Naturalist 133: 240–256.

Terborgh, J. 1992. Diversity and the Tropical Rain Forest. Scientific American Library, New York.

_____ & E. Andresen. 1998. The composition of Amazonian forests: Patterns at local and regional scales. Journal of Tropical Ecology 14: 645–664.

Tuomisto, H. & K. Ruokolainen. 1994. Distribution of Pteridophyta and Melastomataceae along an edaphic gradient in an Amazonian rain forest. Journal of Vegetation Science 5: 25–34.

_____, _____, R. Kalliola, A. Linna, W. Danjoy & Z. Rodríguez. 1995. Dissecting Amazonian biodiversity. Science 269: 63–66.

Vásquez, R. 1991. *Caraipa* (Guttiferae) del Perú. Ann. Missouri Bot. Gard. 78: 1002–1008.

_____. 1997. Flórula de las Reservas Biológicas de Iquitos, Perú. Monographs in Systematic Botany from the Missouri Botanical Garden 63.

_____ & O. Phillips. 2000. Allpahuayo: Floristics, structure and dynamics of a high diversity forest in Amazonian Peru. Annals of the Missouri Botanical Garden 87: 499–527.

Vázquez G., J. A. & T. J. Givnish. 1998. Altitudinal gradients in tropical forest composition, structure, and diversity in the Sierra da Manantlán. Journal of Ecology 86: 999–1020.

Vormisto, J., O. L. Phillips, K. Ruokolainen, H. Tuomisto & R. Vásquez. 2000. A comparison of small-scale distribution patterns of four plant groups in an Amazonian rainforest. Ecography 23: 349–359.

Walter, H. & H. Lieth. 1967. Climate Diagram World Atlas. VEB Gustav Fischer, Jena.

Watt, A. D., D. Sheil, O. L. Phillips, A. Newton, D. Moss, C. Lyal, A. Lowe, V. Kapos, S. Jones, J. Hall, J. Healey, W. Hawthorne, A. Gillison, N. Garwood, P. Eggleton, J. Carter Lengeler, C. Bibby & G. Argent. (In Press). Towards better methods of rapid biodiversity assessment in tropical forests. Centre for International Forestry Research (CIFOR) Occasional Paper No. XXX. CIFOR, Bogor, Indonesia.

Werff, H. van der & H. G. Richter. 1985. *Carvalhaphragma* Airy-Shaw, a genus new to the Neotropics. Systematic Botany 10: 166–173.

White, J. 1906. Atlas of Canada. Toronto Lithographing, Toronto.

Whittaker, R. H. 1972. Evolution and measurement of species diversity. Taxon 21: 213–251.

_____. 1977. Evolution of species diversity in land communities. Evolutionary Biology 10: 1–87.

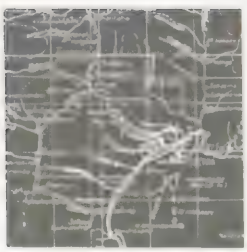
Wills, C. & R. Condit. 1999. Similar non-random processes maintain diversity in two tropical rainforests. Proceedings of the Royal Society of London Series B-Biological Sciences 266: 1445–1452.

World Meteorological Organization. 1970. Climatic Atlas of Europe. Cartographia, Budapest.

_____. 1975. Climatic Atlas of South America. Cartographia, Budapest.

_____. 1979a. Climatic Atlas of North and Central America. WHO and UNESCO, Paris.

_____. 1979b. Climatic Atlas of South America. WHO and UNESCO, Paris.



Appendix 1 List of Sites by Country of Origin

Country	Site Number / Site Name	Abbrev.	Latitude	Longitude	Elev. (m)	Precip. (mm)
Argentina	58 / Parque El Rey	parqueer	24°35' S	64°42' W	1000	1500
Argentina	59 / Arroyo Riachuelo	riachuel	27° S	58° W	60	1000
Argentina	60 / Salta	salta	24°40' S	64°30' W	1300-1400	712
Australia	207 / Davies River State Forest	davies	17°05' S	145°34' E	740-800	2300
Bolivia	61 / Calabatea	calabate	14°55' S	68°20' W	1500-1550	2000
Bolivia	62 / Chaquimayo	chaquima	14°34' S	68°28' W	1000	1600
Bolivia	63 / Curuyuqui	curuyuqu	18°45'56" S	62°13'59" W	350	450
Bolivia	64 / Curuyuqui Riverine	curuyuqr	18°45' S	62°18' W	350	450
Bolivia	65 / El Encanto	encanto	14°38' S	60°42' W	280	1700
Bolivia	66 / Incahuara	incahuar	15°55' S	67°35' W	1520-1560	3500
Bolivia	67 / Alto Madidi	madidi	13°35' S	68°46' W	280	3000
Bolivia	68 / Alto Madidi, ridge top	madidiri	13°35' S	68°46' W	360-380	3000
Bolivia	69 / Nuevo Mundo	nuevomun	10°39' S	66°46' W	160	1820
Bolivia	70 / Perseverancia	persever	14°38' S	62°37' W	100	1350
Bolivia	71 / Quiapaca	quiapaca	18°20' S	59°30' W	300	900
Bolivia	72 / Río Negro	rionegr	9°50' S	65°40' W	100	1820
Bolivia	73 / Sacramento	sacram	16°18' S	67°48' W	2380-2450	2450
Bolivia	74 / Santa Cruz	santacru	17°46' S	63°04' W	375	1200
Bolivia	75 / Santiago	santiago	18°20' S	59°30' W	700-800	990
Bolivia	76 / Yanaígua	yanaigua	19°42' S	62°06' W	250	400
Brazil	77 / Alter do Chão	alterdoc	02°30' S	54°58' W	50	2000
Brazil	78 / Boraceia	boraceia	23°23' S	46°00' W	800	3500
Brazil	79 / Campinas	campinas	22°50' S	47°08' W	550-600	1400
Brazil	80 / Carajas	carajas	05°30' S	ca. 51°00' W	620	1850
Brazil	81 / Carlos Botelho State Park	carlosbo	24°15' S	46°56' W	550-560	3100
Brazil	82 / Ducke Reserve	ducke	03° S	59°58' W	80	ca. 2200
Brazil	83 / Camorin-Jacarepaguá	camorin	22°56' S	43°22' W	200	1500
Brazil	84 / Linhares	linhares	19°18' S	40°04' W	30-60	1400
Brazil	85 / Manaus	manaus	03°08' S	60°01' W	85	ca. 2000
Brazil	86 / Belém-Mocambo	belem	01°30' S	47°59' W	20	2760
Cameroon	189 / Banyong	banyong	05°00' N	09°10' E	420	2600
Cameroon	190 / Korup National Park	korup	05°44' N	08°42' E	100	5460
Cameroon	191 / Mount Cameroun	mtcam	04°05' N	09°00' E	200-250	8000
Canada	1 / Kitlope 1	kitlope1	53°04'20" N	127°49'31" W	20 m	2100
Canada	2 / Kitlope 2	kitlope2	52°12'20" N	127°47'30" W	10 m	2100
Canada	3 / Mt. St. Hilaire	mtsthila	45°37" N	73°35' W	n/a	750
Central Africa Rep.	192 / Ndakan	ndakani	02°22' N	16°09' E	390	1400
Central Africa Rep.	193 / Ndakan upland	ndakanni	02°22' N	16°19' E	400	1400
Chile	87 / Alto de Mirador	mirador	40°14' S	73°18' W	800	4000
Chile	88 / Bosque de San Martín	martin	39°30' S	73°10' W	30	2316
Chile	89 / Puyehue	puyehue	40°43' S	72°18' W	460-520	3000
Colombia	29 / Isla Providencia	providen	13°21' N	81°22' W	230	2500
Colombia	90 / Alto de Cuevas	cuevas	06°40' N	76°30' W	1670	4000
Colombia	91 / Alto de Sapa	altosapa	07°10' N	75°54' W	2660	4500
Colombia	92 / Alto de Mirador	altodem	10°55' N	73°50' W	1180	2500
Colombia	93 / Anchicayá	anchicay	03°45' N	76°50' W	300	3100
Colombia	94 / Antado	antado	07°15' N	75°55' W	1560	4500

Country	Site Number / Site Name	Abbrev.	Latitude	Longitude	Elev. (m)	Precip. (mm)
Colombia	95 / Araracuara, high campina	arcating	00°25' S	72°19' W	250	3500
Colombia	96 / Araracuara	araracua	00°25' S	72°20' W	200	3250
Colombia	97 / Bajo Calima	calima	03°55' N	77°00' W	50-150	7470
Colombia	98 / Bosque de la Cueva	cueva	11°05' N	73°28' W	350	2000
Colombia	99 / Campano	campano	11°08' N	74°01' W	1680-1690	1250
Colombia	100 / Carpanta Siete Cuerales	sietecue	04°35' N	73°40' W	2350	ca. 3000
Colombia	101 / Carpanta	carpanta	04°35' N	73°40' W	2900	ca. 3000
Colombia	102 / Cedral	cedral	04°45' N	75°33' W	2140	ca. 3000
Colombia	103 / Cerro Kennedy	kennedy	11°05' N	74°01' W	2600	1000
Colombia	104 / Cerro Espejo	cerroesp	10°28' N	72°50' W	2550-2570	1750
Colombia	105 / Colosó 1	colosoi	09°30' N	75°48' W	300	1000
Colombia	106 / Farallones de Cali	farall	03°30' N	76°35' W	1930	1500
Colombia	107 / Finca Mehrenberg	fincam	02°16' N	76°12' W	2275-2300	2290
Colombia	108 / Finca Zíngara	fincaz	03°32' N	76°35' W	1960	1647
Colombia	109 / Galerazamba	galeraz	10°48' N	75°15' W	10	500
Colombia	110 / Hacienda Himalaya	hachimal	03°38' N	76°33' W	1860	1500
Colombia	111 / La Planada	laplanad	01°08' N	77°58' W	1800	4300
Colombia	112 / La Raya	laraya	08°20' N	74°55' W	50-80	3000
Colombia	113 / Loma de los Colorados	colorado	09°58' N	75°10' W	200-250	1000
Colombia	114 / Manaure	manaure	10°22' N	73°08' W	540	1500
Colombia	115 / Mariquita	mariquit	05°15' N	74°50' W	560	1920
Colombia	116 / Murrí	murri	06°35' N	76°50' W	910	4200
Colombia	117 / Neusa	neusa	05°10' N	74°08' W	3050	985
Colombia	118 / Río Manso	riomanso	07°30' N	76°05' W	200	4000
Colombia	119 / Sabana Rubia	sabanaru	10°30' N	72°55' W	2940	1500
Colombia	120 / Lomas de Santo Tomás	santotom	04°55' N	74°50' W	320	1500
Colombia	121 / Tayrona National Park	tayrona	11°20' N	74°02' W	50	1500
Colombia	122 / Tutunendo	tutunend	05°46' N	76°35' W	90	9000
Colombia	123 / Ucumarí	ucumari	04°00' N	75°30' W	2620	3000
Costa Rica	30 / Guanacaste upland	guanup	10°32' N	85°18' W	100	1600
Costa Rica	31 / Guanacaste gallery forest	guangf	10°30' N	85°10' W	100	1600
Costa Rica	32 / La Selva	laselva	10°26' N	84°01' W	100	4000
Costa Rica	33 / Magsasay	magsasay	10°24' N	84°03' W	150	3884
Costa Rica	34 / Carara National Park	carara	09°46' N	84°32' W	130	3500
Costa Rica	35 / Rancho Quemado	ranchoqu	08°42' N	83°33' W	300	3125
Costa Rica	36 / Osa-Sirena	osasiren	08°30' N	83°55' W	30	3800
Cuba	37 / Sierra Rosario	sierraro	22°50' S	83°00' W	370-390	2200
Dominican Republic	38 / Los Haitaíses National Park	loshaiti	19°05' N	69°30' W	10-20	1000
Ecuador	124 / Campamento Achupalla	achupall	03°27' S	78°22' W	2100	2500
Ecuador	125 / Fila de Bilsa	bilsa	00°37' N	79°51' W	280	2500
Ecuador	126 / Capeira	capeira	02°00' S	79°58' W	50	804
Ecuador	127 / Centinela	centinel	00°35' S	79°20' W	650-800	4500+
Ecuador	128 / Cuangos	cuangos	03°29' S	78°14' W	1500-1600	2500
Ecuador	129 / Dureno	dureno	00°15' N	76°45' W	300	3000
Ecuador	130 / El Corazón	elcoraz	00°35' N	77°42' W	3150	3700
Ecuador	131 / Esmeraldas Tropical Garden	esmerald	00°54' N	79°37' W	150	1750
Ecuador	132 / Huamaní	huamani	00°40' S	77°40' W	1150	3500

Country	Site Number / Site Name	Abbrev.	Latitude	Longitude	Elev. (m)	Precip. (mm)
Ecuador	133 / Jatun Sacha	jatunsac	01°04' S	77°36' W	450	4100
Ecuador	134 / Jauneche	jauneche	01°06' S	79°38' W	75	1855
Ecuador	135 / Maquipucuna	maquipuc	00°07' N	78°37' W	1630	3000
Ecuador	136 / Miazi	miazi	04°18' S	78°40' W	850	2000
Ecuador	137 / Pasochoa	pasochoa	00°28' S	78°25' W	3000-3040	1250
Ecuador	138 / Perro Muerto	perromue	01°36' S	80°42' W	450	1550
Ecuador	139 / Río Nangaritza	nangarit	04°18' S	78°40' W	930	ca. 5000
Ecuador 1	40 / Río Palenque 1	riopal1	00°34' S	79°20' W	200	2650
Ecuador	141 / Río Palenque 2	riopal2	00°34' S	79°20' W	150-220	2650
Ecuador	142 / San Sebastián	sansebas	01°36' S	80°42' W	550	2000
Finland	186 / Ruissalo	ruissalo	60°32' N	22°28' E	20	500
Finland	187 / Liesjarvi National Park	liesjvar	60°40' N	23°55' E	50	600
French Guiana	143 / Saul	saul	03°38' N	53°12' W	300	2358
Gabon	194 / Belinga	belinga	01°09' N	13°12' E	740-770	1800
Gabon	195 / Makokou 1	makokou1	00°34' N	12°52' E	480	1755
Gabon	196 / Makokou 2	makokou2	00°34' N	12°52' E	480	1755
Germany	184 / Süderhackstedt	suderhac	54°36' N	09°17' E	20	695
Germany	185 / Allacher Löhe	allacher	48°04' N	11°30' E	530	866
Guyana	144 / Berbice River	berbicer	05°30' N	58°05' W	160	2200
India	208 / Avalanche	avalanch	11°18' N	76°35' E	2100	1400
India	209 / Mudumalai 1	mudumal1	11°36' N	76°32' E	1000	1000
India	210 / Mudumalai 2	mudumal2	11°36' N	76°32' E	1000	1000
India	211 / Nadugani	nadugani	11°27' N	76°23' E	680-700	ca. 2500
Jamaica	39 / Round Hill, Slope	roundslo	17°20' N	77°25' W	150	1200
Jamaica	40 / Round Hill, Top	roundtop	17°20' N	77°25' W	300	1200
Japan	212 / Chiba	chiba	35°09' N	140°09' E	270	2600
Madagascar	197 / Beza 1	beza1	23°37'-40' S	44°33 -38' E	150	600
Madagascar	198 / Beza 2	beza2	23°37'-40' S	44°33'-38' E	150-200	600
Madagascar	199 / Beza 3	beza3	23°37'-40' S	44°33'-38' E	150-200	600
Madagascar	200 / Ankarafantsika	ankarif	16°19' S	46°49' E	70-100	1400
Madagascar	201 / Nosy Mangabe	nosymang	15°30' S	49°46' E	250-300	3000-4000
Madagascar	202 / Perinet Forestry Station	perinet	18°55' S	48°25' E	980	1200
Malaysia	213 / Bako National Park	bakosar	01°45' N	110°25' E	80-100	4000
Malaysia	214 / Genting Highlands	genting	03°58' N	101°38' E	880-900	2000+
Malaysia	215 / Pasoh 30	pasoh30	03° N	102°20' E	100	2054
Malaysia	216 / Pasoh 40	pasoh40	03° N	102°20' E	100	2054
Malaysia	217 / Semengoh Forest Preserve	semengoh	01°50' N	110°05' E	100	4167
Mauritius	203 / Brise Fer	brisefer	20°22'37" S	57°25'36" E	550	2400
Mexico	41 / Benito Juarez	benito	15°20' N	92°15' W	2100	1500
Mexico	42 / Bosque de Guadeloupe	bosquede	19°30' N	96°57' W	1200	1514
Mexico	43 / Chamela Upland 1	chamela 1	19°30' N	105°03' W	10-584	748
Mexico	44 / Chamela Upland 2	chamela 2	19°30' N	105°03' W	10-548	748
Mexico	45 / Chamela Arroyos	chamela 3	19°30' N	105°03' W	10-584	748
Mexico	46 / Chamela 4	chamela 4	19°30' N	105°03' W	100	748
Mexico	47 / Los Tuxtlas	tuxtlas	18°35 N	95°08' W	170-200	4953
Mexico	48 / Las Joyas	lasjoyas	19°35' N	104°08' W	1950	1000
Mexico	49 / Quince Ocotes	quinceoc	19°44' N	104°15' W	1800	1000

Country	Site Number / Site Name	Abbrev.	Latitude	Longitude	Elev. (m)	Precip. (mm)
Mexico	50 / Motozintla	motozint	15°20' N	92°12' W	1600	500
New Caledonia	218 / Rivière des Pirogues	newcaldo	22°10' S	166°50' E	400	2200
Nicaragua	51 / Cerro Oluma	cerroolu	12°18' N	85°24' W	840	2000
Nicaragua	52 / Cerro El Picacho	cerroelp	13°00' N	85°55' W	1420	2000
Nigeria	204 / Omo Forest Reserve	omofor	07° N	05° E	150	1800
Panama	53 / Curundu	curundu	08°59' N	79°33' W	20	1830
Panama	54 / Madden Forest	madden	09°06' N	79°36' W	50	2433
Panama	55 / Pipeline Road	pipeline	09°10' N	79°45' W	300	3000
Papua New Guinea	219 / Baitete	baitete	05°10' S	145°48' E	200	3375
Papua New Guinea	220 / Varirata National Park	varirata	09°30' S	147°30' E	740	1000
Paraguay	145 / Río Jejuimi	jejuemi	24°08' S	55°32' W	150	1800
Peru	146 / Allpahuayo	allpahua	03°57' S	73°25' W	130-180	ca. 3100
Peru	147 / Bosque Nacional von Humboldt	humboldt	08°50' S	75°00' W	270	ca. 2500
Peru	148 / Cabeza de Mono	cabezade	10°20' S	75°18' W	320	4000
Peru	149 / Cerro Aypate	cerroayp	04°35' S	79°32' W	2770	1800
Peru	150 / Cerros de Amotape	amotape	04°09' S	80°37' W	820	n/a
Peru	151 / Chirinos	chirinos	05°25' S	78°53' W	1780	1400
Peru	152 / Chorro Blanco	chorrobl	06°10' S	78°45' W	2380	1400
Peru	153 / Cocha Cashu	cochacas	11°51' S	71°19' W	380	2000
Peru	154 / Constancia	constanc	04°15' S	72°45' W	160	ca. 3100
Peru	155 / Cutervo Nacional Park	cutervo	06°10' S	78°40' W	2200-2250	1400
Peru	156 / Cuzco Amazónico	cuzcoam	12°35' S	69°09' W	200	2350
Peru	157 / El Pargo	elpargo	06°30' S	79°31' W	3000	1075
Peru	158 / Indiana	indiana	03°31' S	73°04' W	130	ca. 3100
Peru	159 / Jenaro Herrera	jenarohe	04°55' S	73°45' W	130	2520
Peru	160 / La Genoa	lagenoa	11°05' S	75°25' W	1140	2000
Peru	161 / Mishana Tahuampa	tahuampa	03°47' S	73°30' W	130	3100
Peru	162 / Mishana Old Floodplain	mishnfl	03°47' S	73°30' W	130	3100
Peru	163 / Mishana White Sand	mishws	03°47' S	73°30' W	140	ca. 3100
Peru	164 / Montaña de Cuyas	cuyas	04°32' S	79°44' W	2410	700
Peru	165 / Río Candamo	candamo	13°30' S	69°50' W	790	6760
Peru	166 / Pampas del Heath	rioheath	12°50' S	68°50' W	200	2200
Peru	167 / Río Távara	riotavar	13°21' S	69°40' W	400	6760
Peru	168 / Shiringamazú	shiringa	10°20' S	75°10' W	300	5000
Peru	169 / Quebrada Sucusari	sucusari	03°15' S	72°55' W	140	ca. 3100
Peru	170 / Tambopata Upland Sandy	tambupl	12°49' S	69°43' W	280	2200
Peru	171 / Tambopata Alluvial	tamboall	12°50' S	69°17' W	260	2200
Peru	172 / Tambopata Swamp Trail	tamblat2	12°47' S	69°17' W	250	2200
Peru	173 / Tambopata Lateritic	tambo	12°47' S	69°17' W	260	2200
Peru	174 / Tarapoto	tarapoto	06°35' S	76°25' W	350-540	1400
Peru	175 / Venceremos	vencer	05°45' S	77°40' W	1850	1300
Peru	176 / Yanamono Tahuampa	yanamtah	03°28' S	72°50' W	120-130	ca. 3100
Peru	177 / Yanamono 1	yanam1	03°26' S	72°51' W	140	ca. 3100
Peru	178 / Yanamono 2	yanam2	03°26' S	72°51' W	140	ca. 3100
Philippines	221 / Palanan	palanan	17°08' N	122°31' E	10-50	2400
Puerto Rico	56 / Luquillo	luquillo	18°11' N	65°50' W	300	3500
Puerto Rico	57 / Mogotes de Nevárez	mogote	18°25' N	66°15' W	50	1500

Country	Site Number / Site Name	Abbrev.	Latitude	Longitude	Elev. (m)	Precip. (mm)
Sweden	188 / Uppsala	uppsala	59°51' N	17°38' E	20	500
Taiwan	222 / Kenting National Park	kenting	21°55' N	120°50' E	200	2500
Taiwan	223 / Nanjen Shan Ecological Area	nanjensh	22° N	120°50' E	310	2500
Tanzania	205 / Pande Forest Reserve	pande	06°40' S	39°05' E	80	1000
Tanzania	206 / Pugu Forest Reserve	pugu	06°50' S	39°05' E	150-200	1236
Thailand	224 / Khao Yai National Park	khaoyai	14°20' N	101°50' E	700	ca. 2300
Thailand	225 / Sakaerat 1	sakaerat	14°30' N	102° E	400	ca. 1500
Thailand	226 / Sakaerat 2	sakaerat2	14°30' N	102° E	400	ca. 1500
U.S.A.	4 / Matthieson Hammock	matthies	25°43' N	80°16' W	15	1375
U.S.A.	5 / San Felasko Hammock	sanfelas	29°41' N	82°26' W	30	1375
U.S.A.	6 / U. Florida Horticulture Woods	ufhortic	29°40' N	82°20' W	50	1375
U.S.A.	7 / Cedar Bluffs	cedarblu	39°46' N	86°09' W	215	1000
U.S.A.	8 / Northwest Branch	nwbranch	39°02' N	77° 02' W	20	1060
U.S.A.	9 / Babler State Park	bablersp	38°32' N	90°40' W	150	930
U.S.A.	10 / Cuivre River State Park	cuivre	39°01' N	91°00' W	140	930
U.S.A.	11 / Rock Creek	rockcree	37°30' N	90°15' W	285	1125
U.S.A.	12 / Tyson Reserve, Glade	tysongla	38°30' N	90°31' W	150	932
U.S.A.	13 / Tyson Reserve, Woods	tysonwoo	38°30' N	90°31' W	150	932
U.S.A.	14 / Valley View Glades	valleyvi	38°15' N	90°37' W	225	930
U.S.A.	15 / Indian Cave State Park	indianca	40°30' N	95°43' W	320	900
U.S.A.	16 / Cary Arboretum	cary	46°50' N	73°45' W	210	1020
U.S.A.	17 / Montgomery Place	montgome	43°10' N	77°37' W	210	875
U.S.A.	18 / Bankamp State Park	bankamp	40°03' N	81°02' W	250	875
U.S.A.	19 / Heuston Woods, Beech/Maple	heustobm	39°33' N	84°43' W	200	1000
U.S.A.	20 / Heuston Woods, mixed forest	heustomf	39°33' N	84°43' W	200	1000
U.S.A.	21 / Timberline	timberli	45°17' N	121°45' W	2000	2200
U.S.A.	22 / Jones Mill	jonesmil	40°05' N	79°21' W	500	1100
U.S.A.	23 / Laurel Ridge	laurelri	39°57' N	79°22' W	670	1000
U.S.A.	24 / Kane, Allegheny Nat'l Forest	kaneaile	41°40' N	78°48' W	500	1000
U.S.A.	25 / Tidroute, Allegheny Nat'l Forest	tidroute	41°42' N	79°24' W	310	1000
U.S.A.	26 / Wild Basin Preserve	wildbasi	30°20' N	97°55' W	1600	750
U.S.A.	27 / Burling Tract	burling	38°57' N	77°10' W	60	1053
U.S.A.	28 / Potomac	potomac	38°05' N	76°34' W	33	875
Venezuela	179 / Blohm Ranch	blohmr	08°34' N	67°35' W	100	1400
Venezuela	180 / Boca de Uchire	uchire	10°8'48" N	65°25'40" W	150	1200
Venezuela	181 / Cerro de la Neblina 1	ceroneb1	00°50' N	66°11' W	140	3000
Venezuela	182 / Cerro de la Neblina 2	ceroneb2	00°50' N	66°11' W	140	3000
Venezuela	183 / Estación Biológica de los Llanos	llano	08°56' N	67°25' W	100	1312

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Al Gentry (1945-1993) was one of the great plant explorers and an unparalleled authority on the botany of tropical forests, particularly those of Central and western South America. His studies of the tropical plant family Bignoniaceae and ecological studies of forest diversity have changed the way biologists think about tropical forests and their conservation.

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